Death Valley

National Park Service
U.S. Department of the Interior

Death Valley National Park

Construct Grapevine Replacement Housing Environmental Assessment

November 15, 2006

Death Valley National Park
Death Valley, California 92328

United States Department of the Interior • National Park Service • Death Valley National Park

Executive Summary

This Environmental Assessment has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, 42 U.S. C. 4321-4347, as amended), including the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1500 -1508 and other applicable laws, National Park Service Management Policies (2006) and management directives. This Environmental Assessment also facilitates compliance with Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, the Wilderness Act, Clean Water Act, and the Clean Air Act enacted for the protection of the environment.

This Environmental Assessment (EA) describes the impacts associated with the proposed construction of replacement employee housing in Death Valley National Park. The No Action Alternative (Alternative 1) describes the existing conditions and maintenance associated with managing existing employee housing in the Grapevine Housing Area at Death Valley. Alternative 2 proposes constructing three dormitories within the Cow Creek housing area, within the park, and two duplexes and a single-family home outside the park in Beatty, Nevada to replace housing that will be lost at Grapevine when additional three-bedroom trailers are condemned due to excessive repair costs. Alternative 3 proposes constructing the dormitories at Salt Pan Vista, with the duplexes and a single-family home constructed within the Cow Creek housing area. A summary of other alternatives considered but not fully analyzed is also provided. The park’s preferred alternative is Alternative 3 and the environmentally preferred alternative is Alternative 3.

As noted above, Alternative 1, the No Action Alternative (Continue Current Management) describes the continuation of existing management practices as they apply to park housing in Death Valley National Park. This alternative is used as a baseline of current conditions to compare other alternatives.

The action alternatives (Alternatives 2 and 3) are based on the purpose and need for the project and conform to existing planning documents, including the Death Valley National Park General Management Plan (NPS 2002) and other National Park Service and park planning documents.

If reviewers do not identify significant environmental impacts, this Environmental Assessment will be used to prepare a Finding of No Significant Impact (FONSI), which will be sent to the National Park Service Pacific West Regional Director for approval. Implementation of the selected action will then follow soon after.

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I. Introduction

As noted in its General Management Plan, Death Valley National Park contains the lowest point in the Western Hemisphere (282 feet below sea level) and is one of the hottest places in the world (with the world's second highest recorded temperature – 134 degrees Fahrenheit or 57 degrees Celsius) with the least precipitation in the United States (1.84 inches average per year). It is a vast geological museum, representing a substantial portion of the earth's geologic history in its examples of most geologic eras. Here, plant and animal species, some of which occur nowhere else in the world, have adapted to the harsh desert environment. People have also adjusted to these severe conditions, as evidenced by extensive archeological sites; historical sites related to the successive waves of prospectors; miners, and homesteaders; present-day residence of native Americans; and the current resort developments and active mines (NPS 2002:2-3).

Among the park's greatest assets today are the clear air, vast open spaces that stretch toward distant horizons, and the overwhelming silence. Approximately 800,000 people per year experience the stark and lonely vastness of the valley; the panorama of rugged canyons and mountains; the pleasures of the dry, moderate winter climate; the challenge of the hot, arid summer; the relief of the cooler mountains, and the reminders of frontier and Native American ways of life (NPS 2002:2).

Death Valley National Park is located in California in Inyo and San Bernardino counties and in Nevada in Nye and Esmeralda counties.

A. Scope of the Environmental Assessment

This Environmental Assessment has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, 42 U.S. C. 4321-4347, as amended), including the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1500 -1508 and other applicable laws, National Park Service Management Policies (2006) and management directives. This Environmental Assessment also facilitates compliance with Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, the Wilderness Act, Clean Water Act, and the Clean Air Act enacted for the protection of the environment.

NEPA requires the documentation and evaluation of potential impacts resulting from federal actions on lands under federal jurisdiction. Federal actions may include projects financed, assisted, conducted, regulated or approved by a federal agency. An Environmental Assessment discloses the potential environmental consequences of implementing the proposed action and other reasonable and feasible alternatives. NEPA is intended to provide decision-makers with sound knowledge of the environmental consequences of the alternatives available to them. In this case, the superintendent of Death Valley National Park and the Pacific West Regional Director are faced with a decision regarding whether to construct replacement employee housing for Death Valley National Park as described herein.

The purpose of this Environmental Assessment is to identify, evaluate and document the potential effects of the proposed construction of replacement employee housing in the park. Existing conditions constitute the baseline for evaluating the effects of the proposed rehabilitation. The existing conditions are presented in the No Action Alternative (Alternative 1). Alternative 2 presents the option of building 16 bedrooms of seasonal dormitories in the Cow Creek housing area and 10 bedrooms of housing for permanent employees in Beatty, Nevada. Alternative 3 presents the option of building 16 bedrooms of seasonal dormitories in the Cow Creek administrative area (Salt Pan Vista) and 10 bedrooms of permanent housing in the Cow Creek housing area.

An interdisciplinary team comprised of National Park Service staff, including engineers and natural and cultural resources professionals determined the purpose and need for the project and identified the likely beneficial and adverse effects of the proposed actions compared to existing conditions as documented herein. Proposed improvements to park housing were also identified during public scoping for this document.

B. Park Purpose and Significance

Enabling Legislation

Death Valley National Monument was established by presidential proclamation under the Antiquities Act of 1906, on February 11, 1933 (Proclamation No. 2028). The original monument contained approximately 1,601,800 acres. Supplementary proclamations in March 1937 (No. 2228) and January 1952 (No. 2961) increased the monument's acreage to 2,067,793 acres. The monument was subsequently enlarged and changed to Death Valley National Park by Congress on October 31, 1994, with the passage of the California Desert Protection Act (16 U.S.C. 410aaa-83). Approximately 1.3 million acres of new lands were added, bringing the total acreage of the new park to about 3,396,192 acres. Most of the Saline, Eureka, northern Panamint, and Greenwater valleys were added to the park and nearly 95 percent of the park was designated wilderness by that same act.

General Description of Park

Death Valley National Park is the largest national park unit in the contiguous 48 states. The park contains more than three million acres of land, ranging from the desert environment surrounding the lowest point in the Western Hemisphere (282 feet below sea level) to sweeping sand dunes almost 700 feet tall (the highest in California), and rugged mountain terrain that reaches elevations in excess of 11,000 feet. The area is considered a vast geologic museum, containing examples of most of the earth's geologic eras.

In addition to the geologic diversity, the park is home to numerous plant and animal species that have adapted to the harsh desert environment. A number of these species are endemic – existing nowhere else in the world. The diversity and uniqueness of the biological resources have resulted in the park's designation as part of the Colorado and Mojave Desert Biosphere Reserve.

Despite the harsh desert environment (generally considered one of the hottest places on Earth), humans have continually been attracted to the area over time as evidenced by extensive archeological sites and continued use by Native Americans; by historical sites related to the influx of prospectors, miners and homesteaders; and by current resort developments. Annual visitation is approximately 800,000 people. In the winter, the majority of park visitors come from the western United States and Canada; while in the summer, international visitors predominate.

Visitor attractions include touring historic mining districts, viewing the exposed geology and the diverse wildlife such as bighorn sheep and pupfish, and touring the popular points of interest such as Zabriskie Point, Artist's Drive, Dante's View, Titus Canyon, Badwater, Death Valley Sand Dunes, and Scotty's Castle. Some visitors come specifically to experience the extreme summer heat, or to simply enjoy the outstanding scenery. There are also numerous backcountry routes available for hiking and camping (NPS 2004).

Along with Joshua Tree National Park, Anza-Borrego Desert State Park (California), and the University of California's Boyd Deep Canyon, Death Valley is part of the Mojave and Colorado Desert Biosphere Reserve (NPS 2002:7).

Mission

The mission of Death Valley National Park is to dedicate itself to protecting significant desert features that provide world class scenic, scientific, and educational opportunities for visitors and academics to explore and study (NPS 2002:3).

Purpose

As stated in the General Management Plan (NPS 2002:3), the purpose of Death Valley National Park is to:

- Preserve the unrivaled scenic, geologic, and natural resources of these unique natural landscapes, while perpetuating significant and diverse ecosystems of the California desert in their natural state. Ensure the maximum protection of wilderness values provided by law.

- Preserve the cultural resources of the California desert associated with prehistoric, historic, and contemporary Native American culture, patterns of western exploration, settlement and mining endeavors.

- Provide opportunities for compatible public outdoor recreation and promote the public's understanding and appreciation of the California desert by interpreting the natural and cultural resources.

- Retain and enhance opportunities for scientific research in undisturbed ecosystems.

Significance

The park's significance is summarized in the General Management Plan (NPS 2002:3-4):

Death Valley contains the lowest point in North America, a portion of the park receives the least precipitation in the United States, and it is the site of the second highest recorded temperature in the world (see specifics above).

Death Valley is world renowned for its exposed, complex and diverse geology representing most of the geological eras on earth.

Death Valley has been the continuous home of Native Americans for centuries, including the Timbisha Shoshone Tribe, whose homeland is in the park today.

Death Valley is a land of dramatic landscapes, from steep rugged mountains to long flat valleys.

The park contains one of the most diverse and significant fossil records and continuous volcanic histories in the United States.

Five major dune types are represented in close proximity in the park, an unusual world occurrence, and at 700 feet the Eureka Sand Dunes are the highest in California.

Death Valley is not only the largest national park in the lower 48 states, it is one of the largest expanses of protected warm desert in the world.

With 95 percent of this very large park designated wilderness, the park provides outstanding opportunities to experience wilderness values.

Extreme conditions and isolation in Death Valley, as well as its location in the Mojave Desert between the Great Basin Desert and the Sonoran Desert, provide the context for its extreme diversity of plants and wildlife. In addition, the great elevational range of the park, from 282 feet below sea level to over 11,000 feet, contributes to its ecological diversity.

Park lands have long been sought and used for mining, and the park represents over 100 years of continuous mining history and the technology that made it possible.

Because of its long association with human use, the park contains an unusually high number of archeological sites, including rock art and alignments.

Scotty’s Castle, with its architectural style, quality and priceless collection of antiques and art, built in a remote, isolated desert environment in the early 1900s, is an icon that has immense public appeal.

II. Purpose and Need

A. Purpose and Need

The General Management Plan and Housing Management Plan for Death Valley National Park call for the replacement of employee trailer housing (26 bedrooms) now located at Grapevine, near Scotty's Castle. Initial investigation into replacing the housing at Grapevine documented a fault-rupture hazard zone, where permanent new housing cannot be located. Because Grapevine housing is used primarily for Scotty's Castle employees, according to NPS policy, replacement housing must be located within an hour commute for Castle employees.

The twelve mobile homes obtained by the National Park Service in the 1970s to facilitate operations in the North District of Death Valley National Park, including Scotty's Castle, have been systematically condemned due to needed repair costs exceeding the value and investment of the housing. Between 2004 and 2005, six trailers were condemned, resulting in a significant loss of housing (more than fourteen bedrooms). This is especially problematic for the park when seasonal housing needs are at their peak, requiring all available bedrooms to be occupied.

National Park Service and Pacific West Regional Office policy do not support the replacement of trailers or mobile homes with the same type of housing. Director's Order #36 (Section 6.4) states that trailers and mobile homes are not considered permanent housing solutions and should be replaced. As a result, servicewide funding has been systematically allocated to replace trailers with permanent housing where it conforms to Housing Needs Assessment results.

The park evaluated existing housing within and outside the park to determine its ability to meet housing needs. This evaluation included analysis of whether there was private housing within a one-hour drive, and whether the housing that was available would meet its needs. As noted in the report, the park has been unable to find affordable housing, especially for lower-graded employees, within a one-hour drive.

In fact, the *Housing Needs Assessment* survey contracted by the National Park Service in 1998 noted a grossly insufficient housing supply for seasonal employees at the park. According to the report:

> ". . . the market for rental and for-sale units within a 60-minute commute distance of the duty stations at Death Valley National Park is severely constrained. There are very few vacant units. The lack of sufficient local industry has lead (sic) to limited housing opportunities, and as a result the local housing market is relatively flat with relatively little turnover. Given the current market conditions, it is extremely unlikely that significant new supply will be added to the area's housing stock over the next few years."

In addition, the Housing Management Plan (NPS 2004:1) states:

> “Due to the remote location and extreme climate of Death Valley National Park, adequate housing is essential to employee morale. The park, already short of housing, is increasing staff with no foreseeable increase in housing. The current housing suffers from an aging infrastructure and maintenance backlog. With the lack of a strong rental market, a strong housing program is essential in attracting and retaining employees needed to operate the park.”

If constructed, the proposed housing would improve basic living conditions and ease the present housing shortage for park employees, particularly seasonals, singles, and small families.

B. Background

1. Planning

Replacement of the remaining Grapevine trailers has been a high priority for the park. Most of the trailers are 30 or more years old and are showing age-related deterioration. Some have safety concerns associated with soft flooring giving way underfoot, deteriorating steps, woodrat access into living areas, etc. Repairs to the trailers for health and safety concerns are continuing to be made, however the trailers are no longer cost-effective to maintain. Under the park's housing program, trailers occupied by permanent staff will continue to be used until such time as alternative housing is arranged. The remaining six trailers at Grapevine would likely be removed within the next five years. Seasonal trailer housing has been discontinued throughout the National Park System because of the lack of investment return given the nature of the need for ongoing maintenance repairs. Complications with the replacement of housing in this area arose with the discovery that the Grapevine housing lies within a Fault-Rupture Hazard Zone (Darwin Myers Associates 1992), where California law (Alquist-Priolo Act) makes it illegal to construct housing. Since then, the park has been trying to find an alternative location for the replacement housing (NPS 2004: 43).

National Park Service-wide analysis of housing in Death Valley resulted in a *Housing Needs Assessment* (NPS 1998) which identified a housing deficit of 34 units, prior to adjustment for dual career households. The assessment also cautioned that 27 positions were vacant and that up to 10 units were currently occupied by dual career households. The park therefore revised the estimated housing deficit to 59 units.

Based on the *Housing Needs Assessment*, a *Housing Management Plan* (NPS 2004) was written to describe the park's current housing situation and strategies for continued management. According to that plan, the nearest established communities to the park management districts are as shown below:

Park Districts (all in California)	Nearest City (amenities available)	State	Mileage (From housing area)
Cow Creek	Pahrump	Nevada	65
Wildrose	Searles Valley	California	40
Stovepipe Wells	Searles Valley	California	73
Grapevine	Tonopah	Nevada	87
Scotty's Castle	Tonopah	Nevada	84

Purpose of Park Housing

National Park Service employee housing is provided to enable employees, who would otherwise have to commute long distances in remote areas, an opportunity to live nearer to their place of employment. The provision of housing conforms to the Executive Order which calls for the federal government to employ strategies that reduce the commute-generated consumption of resources. Employee housing also fulfills a need when a park has a large number of seasonal employees, as is true of Death Valley, in a community with little availability of seasonal rentals.

According to the *Housing Management Plan* (NPS 2004:24), the remote location and extreme climate of Death Valley National Park make the provision of adequate housing essential to employee morale. Housing is provided for required occupants and, dependent upon availability, for other permanent employees who are not required occupants. This is necessary due to an extremely limited rental and home purchase markets within the acceptable 60-minute commute time.

Housing is also provided, when possible, to all non-local seasonal employees and student interns. Although the park has strengthened its recruitment in surrounding communities, the local labor pool is not sufficient to fill all seasonal positions or to meet diversity goals. Student Conservation Association interns (SCAs), volunteers-in-parks (VIPs) (except those that bring their own housing in the form of recreational vehicles), and researchers are provided seasonal housing when available, which is usually restricted to the summer season when fewer paid seasonal employees are on the employee roles. Again, the limited rental market within the acceptable 60-minute commute time forces the need for park housing (NPS 2004:24). Employees who do live outside the park commute to Cow Creek from Pahrump, Nevada (65 miles) and Beatty, Nevada (45 miles).

Housing is allocated based on *Required* and *Permitted* permanent employees as well as seasonal employees. *Required* employees must live in park housing due to the nature of their position (usually law enforcement and/or emergency services). *Permitted* employees may live in housing if they successfully compete for available units through a bid system based on family size, salary and other factors.

Existing Housing

Of the 91 housing units located throughout Death Valley, twelve are trailers and 50 are in other structures. In addition, there are 60 units located at Cow Creek (including PV 42, a condemned house scheduled for removal), seven at Stovepipe Wells, 16 at Grapevine (of which six trailers have already been condemned), five at Scotty’s Castle, and three at Wildrose (currently unavailable as housing due to deterioration) (NPS HMP 2004).

According to the Housing Needs Assessment, the 90 units in the park currently consist of 48 two-bedroom units (of which 10 are trailers), 24 one-bedroom and efficiency units, and 18 three-bedroom units (two are trailers). This count is one shy of the above number because one of the units at Wildrose was left off of the Housing Needs Assessment (NPS 2004:24).

Of the park's 132 paid staff members in winter 2004-2005, 81 were housed in the park (32 were required occupants). Of these, nine were dual-career employees, 10 were seasonal, and one was a term employee. The concessions contract currently allows three units at Scotty's Castle and two trailer units at Grapevine to house concessions employees only (NPS HMP 2004). At the time the housing management plan was written, there were 33 vacant positions with an additional five new positions being created.

In addition to the housing units listed above, the park also maintains 47 recreational vehicle (RV) trailer sites at Cow Creek, Salt Pan Vista and Sims Circle near the school, Stovepipe Wells, and Grapevine. Seasonal employees, researchers, and volunteers who bring their own recreational vehicles or trailers to the park are the primary occupants of these sites, but they are also utilized by contractors working on projects in the park when available (NPS 2004:24).

Past Trailer Replacement

Between 1992 and 1998, the park replaced 24 trailers in the Cow Creek and Stovepipe Wells areas with newly constructed housing. The new housing is a mix of single family homes and two-bedroom duplexes, with a one-bedroom fourplex apartment unit. This trailer replacement was made possible through trailer replacement funding, similar to the proposed current project. All trailers were sold and removed from the park.

Impacts of 2004 Trailer Condemnation

Employees considered ineligible for required units, including seasonal staff, work at four duty stations in the park: Scotty's Castle, Grapevine, Stovepipe Wells, and Cow Creek/Furnace Creek. The housing market for these duty stations is considered to be Beatty, located in Nye County, Nevada. The Local Market Analysis conducted by Greenhorne & O'Mara, Inc. in 1998 found that:

> "although Nye County has experienced significant growth over the past several years, most of the development has occurred in the Pahrump Valley area, which lies outside the acceptable 60-minute commuting range. . . Extensive research yielded only 12 available rental units within a 60-minute commuting distance of the park. This inventory of available units falls well short of the criterion established for the analysis of two market rate units for each unit needed."

They concluded, "As analysis has also shown, due to the remote location of Death Valley National Park, the supply of private housing within the market area needed for employees considered ineligible for Required units is grossly insufficient."

Beatty, Nevada with a population of 1,154 (2000 census, in 2004 this is down to 1,075) is 45 miles northeast of park headquarters over a two-lane, narrow, twisting road with a steep grade over a 4,300 foot elevation pass. The town has a 90-year history of boom and bust cycles associated with the mining industry. A gold mine located between the park boundary and Beatty inflated the population between 1989 and 1991, increased some services, and prompted the construction of a new high school. (Death Valley children are currently bused to Beatty for grades 7 through 12.)

The gold mine ceased operation in 2000, and most of the mine employees have relocated. The population decline has opened up the housing market somewhat, making more housing units (mostly trailers) available, but has had a detrimental effect on the school (fewer teachers and classes) as state and county funding is now funneled toward the rapidly growing Pahrump. A number of local businesses have subsequently closed, including the hardware store, the auto parts store, and the only grocery store in town. The remaining grocery source is a gasoline station convenience store.

In the winter of 2004-2005, the Scotty's Castle seasonal interpretive staff was housed in Beatty, following the condemnation of the trailers they had previously occupied at Grapevine. Accommodations found in Beatty included a few apartments, but were predominately trailers. While a variety of apartments were open in Beatty, only a few of them were furnished and even fewer were the kind of studio/efficiency or one-bedroom units needed by the seasonal staff. Furnished accommodations are almost always necessary for seasonals who generally move long distances between jobs that they hold for very short periods of time – a lifestyle that is not consistent with owning and moving furniture. One bedroom and studio/efficiency apartments are necessary because the seasonals arrive and leave in staggered succession and thus are entering into rental contracts as individuals, not groups that could share larger accommodations.

Most of the Scotty's Castle seasonal interpretive staff ended up renting and living in trailers available in Beatty. In general, the trailers available in Beatty during the winter of 2004-2005 were in far worse shape than the trailers the NPS had condemned at Grapevine. Despite this, the rental costs were higher, placing a financial burden on the staff. These costs were made even higher as a result of commuting costs.

Generally, the seasonal staff members displaced by the condemnation of trailers at Grapevine were GS-04 and GS-05 employees. It was subsequently found that, for employees of this pay grade, the start-up fees for electric service, increased costs of the rental units (compared to the condemned Grapevine trailers), apartment deposits, and gas for the hour-long drive to work and an hour-long drive in a different direction to obtain groceries or medical services made living in Beatty barely a break-even endeavor over a six-month season and made it nearly impossible to save money for educational costs (the purpose of most seasonal employees' summer jobs).

2. Relationship to Laws, National Park Service Policy, and Park Planning Documents

a. LAWS

National Park Service Organic Act

The key provision of the legislation establishing the National Park Service, referred to as the 1916 Organic Act is:

> The National Park Service shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified . . . by such means and

> measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1).

1970 National Park Service General Authorities Act (as amended in 1978 – Redwood amendment)

This act prohibits the National Park Service from allowing any activities that would cause derogation of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress in the enabling legislation for the parks). Therefore, all units are to be managed as national parks, based on their enabling legislation and without regard for their individual titles. Parks also adhere to other applicable federal laws and regulations, such as the Endangered Species Act, the National Historic Preservation Act, the Wilderness Act, and the Wild and Scenic Rivers Act. To articulate its responsibilities under these laws and regulations, the National Park Service has established management policies for all units under its stewardship. The latest edition of these Management Policies was approved in 2006.

National Environmental Policy Act (NEPA) (42 USC 4341 *et seq*.)

NEPA requires the identification and documentation of the environmental consequences of federal actions. Regulations implementing NEPA are set for by the President's Council on Environmental Quality (40 CFR Parts 1500-1508). CEQ regulations establish the requirements and process for agencies to fulfill their obligations under NEPA.

Clean Water Act (CWA) (33 USC 1241 *et seq*.)

Under this act, it is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. Section 401 of the *Clean Water Act* as well as NPS policy requires analysis of impacts on water quality. NPS *Management Policies* provide direction for the preservation, use, and quality of water in national parks.

Endangered Species Act (16 USC 1531 et seq.)

The Endangered Species Act (ESA) requires federal agencies, in consultation with the Secretary of the Interior, to use their authorities in the furtherance of the purposes of the act and to carry out programs for the conservation of listed, endangered, and threatened species (16 USC 1535 Section 7(a)(1)). The ESA also directs federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized, funded, or carried out by an agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat (16 USC 1535 Section 7(a)(2)). Consultation with the United States Fish and Wildlife Service (USFWS) is required if there is likely to be an effect.

National Historic Preservation Act (1966 as amended) (16 USC 470)

Section 106 of the National Historic Preservation Act (NHPA) directs

federal agencies to take into account the effect of any undertaking [a federally funded or assisted project] on historic properties. "Historic property" is any district, building, structure, site, or object that is eligible for listing in the National Register of Historic Places because the property is significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture. This section also provides the Advisory Council on Historic Preservation and the State Historic Preservation Officer (SHPO) an opportunity to comment on the undertaking. The 1992 amendments to the act have further defined the roles of American Indian Tribes and the affected public in the Section 106 process.

Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code, Division 2, Chapter 7.5, Sections 2621 through 2630)
This law requires a geologic investigation directed to the hazard of surface fault rupture for all subdivisions of land, and for most types of new construction. The law further states that structures for human occupancy cannot be built astride the trace of an active fault (Darwin Myers Associates 1992). The Act establishes special study zones for active or potentially active faults to prevent the construction of urban development on the surface trace of active faults. According to the State of California, an active fault is described as having evidence of rupture within the last 11,000 years (Holocene). The NPS in Death Valley National Park has made a good faith effort to identify fault lines and to follow the intent of the act. The Grapevine Housing area, the subject of this Environmental Assessment has been determined to be in a surface fault rupture zone (Darwin Myers Associates 1992, Essington, 2004) and although suitable areas for housing very close to the existing trailer sites exist, they do not have utility infrastructure and would dramatically increase project costs if used (see *Alternatives Considered But Rejected* below).

b. POLICIES

National Park Service Management Policies (2006)
Management Policies governs the way park managers make decisions on a wide range of issues that come before them. Policies related to the subject of this Environmental Assessment include:

9.1 General
. . .Therefore, the Service will not develop, or re-develop a facility within a park until a determination has been made that the facility is necessary and appropriate and that it would not be practicable for the facility to be developed, or the service provided outside the park. . .

9.1.1.2 Integration of Facilities into the Park Environment
Whenever feasible and authorized by Congress, major park facilities—especially those that can be shared with other entities—should be developed outside park boundaries. The Service will encourage the private sector to meet facility needs in gateway communities and thus contribute to local economic development, encourage competition, increase choices for visitors, and minimize the need for in-park construction. Where possible, appropriate, and authorized, the Park Service will cooperatively establish and maintain administration /information facilities with other federal, state, or local entities.

9.1.1.5 Siting Facilities to Avoid Natural Hazards
The Service will strive to site facilities where they will not be damaged or destroyed by natural physical processes. Natural hazard areas include sites with unstable soils and geologic conditions, fault zones, thermal areas, floodplains, flash-flood zones, fire-prone vegetation, and coastal high-hazard areas. Park development that is damaged or destroyed by a hazardous or catastrophic natural event will be thoroughly evaluated for relocation or replacement by new construction at a different location. If a decision is made to relocate or replace a severely damaged or destroyed facility, it will be placed, if practicable, in an area that is believed to be free from natural hazards. In areas where dynamic natural processes cannot be avoided, such as seashores, developed facilities should be sustainably designed (e.g., removable in advance of hazardous storms or other conditions). When it has been determined that facilities must be located in such areas, their design and siting will be based on

- a thorough understanding of the nature of the physical processes; and
- avoiding or mitigating (1) the risks to human life and property, and (2) the effect of the facility on natural physical processes and the ecosystem.

9.1.1.6 Sustainable Energy Design
Any facility development . . . must include improvements in energy efficiency and reduction in greenhouse gas emissions for both the building envelope and the mechanical systems that support the facility. Maximum energy efficiency should be achieved using solar thermal and photovoltaic applications, appropriate insulation and glazing strategies, energy-efficient lighting and appliances, and renewable energy technologies. . .

9.1.3 Construction
The Service will incorporate sustainable principles and practices into design, siting, construction, building materials, utility systems, recycling of all unusable materials, and waste management. Best management practices will be used for all phases of construction activity, including preconstruction, actual construction, and postconstruction. . .

9.1.3.1 Construction Sites
Construction sites will be limited to the smallest feasible area. The selection of construction sites will consider opportunities for taking advantage of natural sources of lighting, heating, and cooling (e.g., near an existing or potential stand of deciduous trees) to maximize energy conservation. Ground disturbance and site management will be carefully controlled to prevent undue damage to vegetation, soils, and archeological resources and to minimize air, water, soil, and noise pollution. Protective fencing and barricades will be provided for safety and to preserve natural and cultural resources. Effective storm water management measures specific to the site will be implemented, and appropriate erosion and sedimentation control measures will be in place at all times. Solid, volatile, and hazardous wastes will be avoided when possible. When they cannot be avoided, they will be properly stored, transported, and disposed of in compliance with federal, state,

and local laws and regulations. All materials will be recycled whenever possible.

. . . Care will be exercised to ensure that construction equipment and all construction materials imported into the park are free of undesirable species. The cost of restoring areas impacted by construction will be considered part of the cost of construction, and funding for restoration will be included in construction budgets.

9.1.3.2 Re-vegetation and Landscaping
. . . To the maximum extent possible, plantings will consist of species that are native to the park or that are historically appropriate for the period or event commemorated. . .

Wherever practicable, soils and plants affected by construction will be salvaged for use in site restoration. Any surplus soils and plants may be used, as appropriate, for the restoration of other degraded areas in the park. Surplus soils not used in this way should be stockpiled for future use. If additional soil and plants are needed to restore disturbed sites, they may be obtained from other sites in the park if it is determined that the use of an in-park source will not significantly affect cultural or natural resources or ecological processes. In any case, imported soils must (1) be compatible with existing soils, (2) be free of undesired seeds and organisms, and (3) fulfill the horticultural requirements of plants used for restoration.

9.4.3 Employee Housing
The Park Service will generally rely on the private sector to provide housing for NPS employees. If reasonable price and quality housing is not available in the private sector, the Service will provide only the number of housing units necessary to support the NPS mission.

Occupancy may be permitted or may be required to provide for timely response to park protection needs, to ensure reasonable deterrence to prevent threats to resources, and to protect the health and safety of visitors and employees. Acceptable and appropriate locations for employee housing will be determined based on these prevention or response services provided for the benefit of the government in meeting the NPS mission.

9.4.3.1 Housing Management Plan
A housing management plan will be prepared and updated every three to five years to determine the necessary number of housing units in a park. Park superintendents are accountable to their regional directors for employee housing in their parks. Regional directors are responsible for approval of park housing management plans and ensuring the consistent application of Servicewide housing policy.

9.4.3.2 Eligible Residents
Park housing will be provided for persons who are essential to the management and operation of the park. These may include not only NPS employees, but also concession employees, volunteers in the parks, Student Conservation Association volunteers, researchers, essential cooperators (for example, schoolteachers, health personnel, contractors, state or county employees), and employees of another federal agency.

9.4.3.4 Design and Construction
Because of location, use, and other unique factors, special design concerns must be considered for housing constructed in parks. Housing must be designed to be as much a part of the natural or cultural setting as possible, yet it must be well built, functional, energy efficient, and cost effective. The design of park housing will minimize impacts on park resources and values, comply with the standards for quality design, and consider regional design and construction influences. Value analysis principles will be applied in all NPS housing construction projects. Design costs will be kept to a minimum by using designs from the NPS Standard Design Catalog and a cost model.

c. PLANS

Death Valley National Park General Management Plan (NPS 2002)
Employee Housing
Those actions specific to housing include the following (NPS 2002:16):

- A development concept plan underway for the Grapevine area will recommend providing housing and replacing the existing trailers for the northern district of the park. Ongoing trailer replacement with permanent houses will continue until completed.
- Prior to constructing additional housing for employees, evaluate the location of the housing and make a determination about whether private housing elsewhere within a one hour drive could serve the same need, and whether the total housing units are the minimum necessary to meet the mission of the park.

Park Boundary and Authorized Acreage
The National Park Service intends to locate some facilities outside the Park consistent with the existing management direction and actions proposed in this plan. This will include, but will not be limited to visitor facilities in Beatty, Baker and Lone Pine, as well as possibly other communities. It also includes the potential establishment of a satellite office in or around areas east of the Park to provide office space for some employees (NPS April 2002:63).

Management objectives contained in the plan under natural and cultural resources include the following objectives related to the development of the proposed alternatives:

- Strive to reduce or eliminate alien species to ensure long-term survival of the natural ecosystem.
- Perpetuate and increase water resource science and conservation.
- Eliminate existing and prohibit new occurrences of all activities inconsistent with the protection of the natural ecosystem, except in the park's developed areas, as noted in the park's management plans.
- Restore to natural appearance, inasmuch as feasible, the land surfaces disturbed by man (sic), recognizing that significant cultural values must be preserved.
- Prevent, eliminate or reduce artificial lighting and noise in order to preserve the opportunity for visitors to experience the night sky and stillness of the desert.

In addition, the following applicable management objectives are listed under either facilities and services or operations (NPS 2002:6):

- Maximize use of existing facilities . . .; build new facilities or expand existing facilities only when a clearly demonstrated, continuing need exists, ensuring that environmental impacts are minimized.
- Through landscaping and design, screen concessioner and National Park Service operations and maintenance areas from visitor areas. At Salt Pan Vista, the dormitories would be oriented east/west in line with and between other existing structures (Natural History Association and CalTrans) to minimize visibility and summer heat exposure (see Architectural Style and Landscaping below).
- Develop utilities and telephone service only as needed; investigate alternative energy systems, especially solar and water, to minimize energy consumption and environmental impacts.
- Provide for visitor and employee safety through an ongoing safety program that recognizes the hazards of heat and flash floods, as well as the physical hazards of mine areas.
- Provide for adequate housing, employee services and recreational opportunities for employees.

The General Management Plan also called for the development of the following related plans (NPS 2002:7 and 15):

- Development Concept Plan for administrative and visitor facilities at Furnace Creek and administrative facilities at Cow Creek and
- Development Concept Plan for Grapevine to remove unsightly and inadequate NPS housing and maintenance facilities from a public use area, to consolidate certain functions, provide more adequate housing for park and concession employees, assure (sic) appropriate visitor services, visitor information, safety and resource protection.

According to the GMP, the Grapevine plan was underway at the time of its publication and the Furnace Creek / Cow Creek plan was among the plans considered the next highest priority to initiate.

Among the GMP actions include the following (NPS 2002:12-16)

- Prepare guidelines for developed areas to create harmony between the built environment and the natural environment.
- Use artificial outdoor lighting limited to basic safety requirements and shielded to keep light on the intended subject and out of the night sky.
- Surface water and groundwater withdrawn for the park’s use will be the amount necessary to achieve park purposes.
- Avoid occupancy and modification of floodplain and wetland areas.
- Replace nonnative plants and landscapes with native plants and landscapes around administrative and visitor facilities, where appropriate for interpretive, aesthetic, water conservation and other management purposes.
- Retain some traditional plantings.
- Locate some facilities outside the park, consistent with the existing management direction and actions proposed in this plan. . .
- Haul solid waste disposal to approved landfills outside the park.
- Expand recycling program.

Cow Creek Cultural Landscape Inventory (NPS 2001)
The Cultural Landscapes Inventory is a comprehensive inventory of all historically significant landscapes in the national park system. The Cow Creek CLI provides a description of the Cow Creek Historic District, a designed landscape that contains administrative, maintenance, and recreational facilities built by the Civilian Conservation Corps between 1933 and 1942.

Development in the Cow Creek Administrative Area in Death Valley National Park Environmental Assessment and FONSI (NPS 1998a)
This Environmental Assessment called for the development of 1) a combined NPS curatorial storage/research and office building, 2) a combined storage and office building for the Death Valley Natural History Association, and 3) an NPS administrative facility, containing auto, electrical, carpenter, plumbing, and sign shops as well as office, storage, hazardous materials storage spaces and fuel tanks. Under the preferred alternative, the buildings would be constructed at Salt Pan Vista. Other sites considered in the analysis were the upper Cow Creek housing area, the Furnace Creek airport area, the Furnace Creek park headquarters area, and an indeterminate location outside the park. The facilities called for by this Environmental Assessment have been constructed.

Cow Creek Developed Area Plan and Environmental Assessment (NPS 1980)
This plan was a response to an Environmental Assessment and FONSI prepared by the California Department of Transportation (CalTrans) and approved on June 27, 1980 to construct a maintenance facility on a 2.5 acre parcel within the Cow Creek area as well as five single-family residences for CalTrans employees servicing the 55 miles of State Highway 190 through the park. The purpose of the plan was to determine if adequate development space at Cow Creek would remain for the NPS if the housing and maintenance facility were constructed (p. 1)

It found 21 suitable sites for new construction, thirteen of which were identified as needed at the time (for a total of 87 units) of housing (p. 2). The suitability analysis was based on the following criteria: visibility from State Highway 190, soil suitability, topography and location.

It also identified the need for a new structure for emergency services office space, two new structures for shop and warehouse functions, a community activities center, expanded school operations, and some minor circulation needs (p. 4-6).

The CalTrans maintenance facility and housing have been constructed as designed.

Flood Mitigation Study and Environmental Assessment (NPS nd)
(See explanation under *Affected Environment – Flooding*)

Bureau of Land Management (BLM) Tonopah Resource Management Plan (October 1997)
The subject property in Beatty is managed under the Tonopah Resource Management Plan (RMP) and the Record of Decision (ROD) approved on October 2, 1997. The Tonopah RMP and ROD is the Tonopah Field Station's planning document required by the Federal Land Policy and Management Act of 1976 (FLPMA), as amended (BLM 2006). This plan

identifies the property as “designated for disposal,” zoning that allows BLM to conduct a public land sale or transfer of the property (Seley pers. comm. 2006).

The following information was used by the BLM in the Land Sale Environmental Assessment and Finding of No Significant Impact (BLM 2006) and pertains to the BLM’s ability to authorize a change in the property through sale or transfer (administrative withdrawal):

> The Federal Land Policy and Management Act of 1976 (FLPMA) 90 Stat. 2750, 43 USC 1701, 1713, and 1719, was passed to authorize BLM’s management of public lands. The applicant requested the parcel be sold under the authority of FLPMA. The subject property is also governed under The Federal Land Transaction Facilitation Act of 2000 (Public Law 106-248, 114 Stat. 613 e*t seq*.).
>
> FLPMA Section 102(a)(1) gives the Bureau of Land Management the authority to sell public lands under certain criteria and states that: “the public lands be retained in Federal ownership, unless as a result of the land use planning procedure... it is determined that disposal of a particular parcel will serve the national interest.”
>
> FLPMA Section 203(a)(3) allows disposal (selling) of public land if it will serve a public benefit.

C. Public Participation

Public involvement is a key part of the National Environmental Policy Act process. In this part of the process, the general public, federal, state, local agencies and organizations are provided an opportunity to identify concerns and issues regarding the potential effects of proposed federal actions. The opportunity to provide input is called “scoping.”

Internal scoping is the effort to engage professional staff of Death Valley National Park and other National Park Service offices to provide information regarding proposed actions that may affect park resources. Death Valley National Park conducted internal scoping from October 2004 to January 2006. A variety of comments were received from park staff in vegetation, wildlife, water resources, and planning.

Public scoping was conducted through the following means: 1) a Press Release describing the intent to begin the public involvement through comments on the proposed project was issued on February 3, 2006.

During the public scoping process for this Environmental Assessment, which occurred from February 3, 2006 through March 15, 2006, two comment letters were received, both from individuals. They were received via email and included the following comments:

- The NPS should not build more housing at Cow Creek because the water at Nevares Spring should not be exploited by those who are paid to protect NPS resources. [partially outside of scope –

water at Nevares Spring would continue to be used regardless of the proposal]

- NPS employees should live in Beatty, Nevada because they would be the highest paid people there and can easily afford the commute.
- All present housing should be removed from Cow Creek and all NPS employees should be made to live outside of Death Valley National Park.
- The shooting range at Cow Creek should be removed. [outside of scope]
- NPS housing should be moved close to where employees work, within the park.
- Moving employees to Beatty forces a long commute over roads not designed for high speed at a time when oil prices are high and supply is uncertain – commutes should be minimized.
- The Park Service should not adopt an alternative that will produce more air pollution and danger to their workers.
- Park Service jobs do not pay enough to support the expense of fuel and wear and tear on personal vehicles.
- Park employees generally like to live and work in a national park setting. Moving housing to Beatty may hurt recruitment because potential employees won't want to live in Beatty.
- Could the trailers be replaced with more trailers? They would be a bargain and should perform okay in a seismic risk area.

This Environmental Assessment is being made available to the public, federal, state and local agencies and organizations through press releases distributed to a wide variety of news media, direct mailing, placement on the park's website and in local public libraries. Copies of the document may also be obtained by calling Death Valley National Park at (760) 786-3200.

Responses to comments on the Environmental Assessment will be addressed in the proposed Finding of No Significant Impact (FONSI) or will be used to prepare an Environmental Impact Statement (if appropriate).

(For more information about specific agency and staff consultation, see the section in this document entitled *List of Persons and Agencies Consulted / Preparers*)

III. Alternatives

The alternatives were developed from collaborative analysis based on the expertise of interdisciplinary planning team members within the National Park Service, as well as on internal and external scoping with the Timbisha Shoshone Tribe, federal, state and local agencies, and other interested organizations and individuals.

The formulation of alternatives was initially overseen by the Grapevine Trailer Replacement Committee, an interdisciplinary team comprised of park staff. The primary purpose of this group was to identify the goals that would be addressed and to suggest a wide array of options for addressing these goals.

The five goals related to park housing within Death Valley National Park that were used to guide the development of the alternatives are:

1. Replace the 26 bedrooms lost to trailer condemnation. New construction would include housing and storage (such as attached garages). As appropriate, it would also include associated roadways, utilities, walks, drives, and landscaping.
2. Use existing utility system infrastructure.
3. Minimize impacts to cultural and natural resources.
4. Blend new construction with pre-existing historic and non-historic architecture, the desert environment, and viewshed.
5. Construct sustainable housing (especially with respect to water and energy efficiency).

After the goals were delineated, several site visits were undertaken to examine buildable locations. Contacts were made with other agencies, including the Timbisha Shoshone Tribe, the Bureau of Land Management, and the Department of Energy, and with private landholders in the vicinity of Scotty’s Junction, to investigate their willingness to explore options requiring outside cooperation. These contacts and investigations resulted in some options being rejected, and some being developed into the alternatives carried forward for further analysis.

A. Alternative 1: No Action (Continue Current Management)

Under this alternative, no new housing would be constructed either within or outside of the park to replace the bedrooms lost when trailers at the Grapevine Housing Area were condemned. Seasonals would continue to be housed in existing structures at the Cow Creek Housing Area or, if no space at Cow Creek exists, they would be required to find housing outside of the park as available in Beatty or Pahrump or in other nearby rural areas. Permanent and term employees at Scotty’s Castle would have to bid on existing housing at the Cow Creek Housing Area as it came open, or find housing in Beatty, Nevada or other more distant areas. The remaining trailers at Grapevine would continue to be phased out of use as the cost of their repairs exceeds $2,500.00, or as they are vacated by the permanent employees currently occupying them, at which point they would also be condemned. Once the trailers have been removed, the vacant trailer lots will be made available for transient trailer use by seasonals, volunteers, and contractors.

Grapevine will continue to be an employee residential area as long as the Mission 66 apartments remain in use. Thereafter, it will be for transient RV use only – not for permanent structures.

Because of the long commute from Beatty (70 minutes) to Scotty's Castle, this alternative would likely continue to be augmented to include a shuttle service from Beatty and/or Cow Creek to the Scotty's Castle worksite.

Actions Common to Alternatives 2 and 3

PURPOSE

Construct housing to serve seasonal, volunteer or permanent (singles and couples or small families) park staff. A total of 26 bedrooms are needed to replace existing housing (see *Type of Housing* below).

ARCHITECTURAL STYLE AND LANDSCAPING

For all construction alternatives covered under this Environmental Assessment, facilities built in either the Cow Creek Housing or Administrative Areas would be constructed in the design style specified in the design guidelines developed for the Cow Creek Maintenance Facilities (Architectural Resources Group 1999). These guidelines were created as a part of the rehabilitation work on the Cow Creek Maintenance Yard and Cow Creek Historic District (National Park Service, 1998a). The following design standards are summarized from the design guidelines.

- Moderate roof pitches would be clad in metal, and walls covered with stucco, or cement-type material, that will be colored to match the existing adobe buildings. Windows will match in style those present on historic buildings within the district.
- New buildings would be planned with energy conservation and efficiency as a major value. This includes minimizing solar gain in the summer, and controlling for winds. Buildings would be designed and sited for maximum shading from the western sun, and western and southern exposures should be limited. Protection from prevailing north and south winds would be accomplished by minimizing the extent of a building's exterior surface or consolidating masses into a compact configuration, within the context of the character of the site.
- Where planting is required, primarily for screening from solar exposure, drip irrigated indigenous planting materials should be used in limited quantities.
- Parking established for residences should be clear and orderly. Where garages are not provided, shade structures for parking should be simple gable-roof forms. Uncovered parking areas should be clearly defined so that the outdoor parking of vehicles is limited to certain areas.
- Site lighting should be minimally visible from Route 190. Levels for area lighting should be minimal. Lighting will be shielded or indirect; no spot or flood lighting will be used.
- All site utilities would be underground. Swamp coolers and other mechanical elements would be visually concealed.
- Any construction within or adjacent to the Cow Creek District would be compatible with the historic structures within the District, meeting the Secretary of the Interior's Standards for

new construction within a National Register Historic District (36 CFR 68.3b).

- New additions, exterior alterations or related new construction will not destroy historic materials, features and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale, and proportion, and massing to protect the integrity of the property and its environment.
- New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

All dormitory units would be single-bedroom facilities. Eight-bedroom dormitories would total 3,000 square feet in area (10,800 feet including landscaping) (Figure 1), and four-bedroom dorms would total 1,850 square feet in area (3,800 feet including landscaping) (Figure 2). All duplexes would be two-bedroom structures with attached garages that total 2,200 square feet (6,900 feet including landscaping)(Figure 3). All two-bedroom houses would have an attached garage and total 1,300 square feet (2,800 feet including landscaping) (Figure 4). NPS standard square footage, as stated in NPS-76: The Housing Design and Rehabilitation Guideline, varies from 550 to 810, with an average of 730 square feet for a one-bedroom unit; and varies from 750 to 1250, with an average of 1,000 square feet for a two-bedroom unit.

For the construction of a single-family house, the footprint of disturbance for the structure and the associated sidewalks, patio and driveway would be approximately 2,800 square feet. For the construction of a duplex, the footprint of permanent disturbance for these features would be approximately 6,900 square feet. For the construction of an eight-bedroom dorm, the total footprint of disturbance would be approximately 10,800 square feet. A four-bedroom dorm would have a total footprint of disturbance of approximately 3,800 square feet.

ACCESSIBILITY

As required by the Architectural Barriers Act of 1968 (P.L. 90-480), the Rehabilitation Act of 1973 (P.L. 93-112), and the 1984 Uniform Federal Accessibility Standards (UFAS) (49 CFR 31528), 1-2 units (or 5 percent) will meet all standards for accessibility to persons with disabilities.

CONSISTENCY WITH NPS AND HUD STANDARDS

All facilities proposed in this document would be designed by the NPS Regional Design Team. All housing would be built according to NPS guidelines.

Housing would conform to direction in NPS Management Policies (NPS 2006:9.4.3):

> Because of location, use, and other unique factors, special design concerns must be considered for housing constructed in parks. Housing must be designed to be as much a part of the natural or cultural setting as possible, yet it must be well

built, functional, energy efficient, and cost effective. The design of park housing will minimize impacts on park resources and values, comply with the standards for quality design, and consider regional design and construction influences. Value analysis principles will be applied in all NPS housing construction projects. Design costs will be kept to a minimum by using designs from the NPS Standard Design Catalog and a cost model.

The housing, if constructed, would also meet the Government Furnished Housing Management Guideline for limitations on new construction. Coupled with NPS Director's Order 76, this guideline establishes the architectural program and ensures appropriate design, detailing, and materials selection. NPS-76 also specifies site, resource, and design criteria. Should any of the proposed alternatives be constructed, these guidelines would provide direction for site development, landscape, and architectural design by identifying significant features such as details, materials, colors, textures, massing, orientation, and spatial organization with regard to precedents set by existing (and planned) development (Higgins 1997).

TYPE OF HOUSING

Based on analysis of park housing needs, the preferred mix of housing would include:

- One two-bedroom house with attached garage/storage;
- Two eight-bedroom dormitories with storage and on-street parking; and
- Two two-bedroom duplexes with attached garages/storage.

Park housing needs could also be met with:

- One two-bedroom house with attached garage/storage;
- One eight-bedroom dormitory with storage and on-street parking;
- Two two-bedroom duplexes with attached garages/storage; and
- Two four-bedroom dormitories with storage and on-street parking.

Associated with the development of the housing units and included in the proposal would also be all associated roadways, utilities, walkways, driveways, and initial landscaping. Dorms would have paved parking curbs. Houses would have paved driveways with curbs. These would be oriented to meet design standards.

UTILITY INFRASTRUCTURE

Water and sewer lines, and electricity, and storm drains would be constructed for all action alternatives. All new utility lines would be constructed below ground, as specified in the Design Guidelines (ARS 1999). Sewer, electrical, propane, telephone, and water services are already in place in all of the proposed locations. All new facilities would tie into the preexisting services in their area.

Sustainable technologies would be incorporated into the planning and design of all proposed structures and facilities. All construction will meet or exceed the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) standards and will adhere to the Silver level.

SOLAR EXPOSURE

All facilities would be oriented with their long axis running east to west in order to minimize the impacts of radiant heat during the afternoon and evening. In addition, no large windows would be constructed on west-facing walls. Overhangs would be constructed to provide optimum shade in the summer and solar gain in the winter.

ENERGY CONSERVATION

All buildings and facilities would be constructed to meet or exceed design standards specified by the LEED program created by the U.S. Green Building Council at the Silver level.

SAFETY

All new housing would include all items needed to meet current fire code.

RETENTION OF EXISTING FACILITIES

Under all alternatives, current facilities in the Cow Creek and elsewhere in the park, with the exception of the Grapevine trailers, would remain. This includes existing housing, administrative facilities, recreational facilities, maintenance areas, curation and collections facilities, visitor contact stations, water and wastewater treatment plants, air quality and other environmental monitoring stations, the shooting range, and others.

CONVERSION OF GRAPEVINE TRAILER SITES

Existing permanent trailer sites at Grapevine would be converted to transient trailer sites for use by seasonal and volunteer staff, and contractors.

B. Alternative 2: Construct Dormitories within Cow Creek Housing Area and House and Duplexes in Beatty, Nevada

General Description: Under Alternative 2, twelve two- and three-bedroom trailers (with 26 bedrooms total) located at Grapevine near Scotty's Castle lost as housing due to condemnation would be replaced within the existing Cow Creek housing area (in two four-bedroom dormitories and one eight-bedroom dormitory), with the remaining ten bedrooms replaced in Beatty, Nevada (two two-bedroom duplexes and one two-bedroom house). Alternative 2 would result in a 1:1 bedroom replacement of 26 existing bedrooms.

NPS Management Policies (2006) encourage the development of needed park facilities outside the park if practicable. Because Beatty is experiencing an economic downturn, with many residents leaving and businesses closing as a result of the recent closure of a nearby gold mine and because existing housing located there is in the same or worse condition than the condemned trailers at Grapevine, this alternative was conceived to increase ties with this important gateway community to Death Valley while simultaneously solving the park's housing shortage. As noted in *Planning Background*, existing Beatty housing also does not meet park needs because it is more expensive than park housing and because it is generally unfurnished. Both conditions, coupled with the commuting costs, make such housing a poor option for seasonal housing

(See also *Alternatives Considered But Rejected*). Other park ties to Beatty include a visitor contact station staffed by the park during peak periods.

[Note: For consistency with previous planning documents, buildable sites below have retained the numbers they were originally given, however, they have also been given location names to further distinguish them as they are described in each alternative. See *Alternatives Considered But Rejected* for additional site location numbers). Each site is described as it is encountered in the Alternative building proposals.]

Siren Site (Site 2) Description: This site along Skyline Drive (Figure 5) is the current location of a condemned CCC-era two bedroom house (Park Village (PV)-42) and associated landscape elements including vegetation, rock walkways and steps, and a fountain. The existing structure (PV-42) was nominated to the National Register of Historic Places in 1989 as one of seven structures in the Park Village Historic District (or Cow Creek Residential Area). In May of 1989, PV-42 was found to be ineligible for the National Register of Historic Places as part of the Park Village Historic District (Appendix X – SHPO letter). At that time, PV-42 was considered to have been so heavily altered that it did not retain the character-defining features that would convey the structure's historic significance. As a result, PV-42 was never nominated as an individual structure. Based on this information, the State Historic Preservation Office has agreed that demolishing the structure and reusing the associated stonework, would have *no adverse effect* on the CCC district.

Siren Site (Site 2) Proposal: After the removal of PV-42, a four-bedroom dorm would be constructed at this location. Besides the existing house, the site is surrounded by existing Mission 66-era structures. To the west is 122 Skyline, a three-bedroom house, and to the east is a cluster of three two-bedroom houses on Donnie Lane. The historic stonework around the landscaping of PV-42 would be removed and stored for later use or repair of other historic stone features in the Cow Creek historic area.

South Skyline Loop (Site 3) Description: This site is located along Skyline Drive between 129 and 328 Skyline (Figure 5). The existing house at 129 Skyline is a Mission 66-era two-bedroom structure. The unit at 328 Skyline is a 1990s-era duplex. This area is currently sloped and the surface is composed of unstable expansive clay soil (bentonite). In the 1980 Developed Area Plan and Environmental Assessment, this area (then called site 14) was considered but found to be a location of apparently poor soil that would only be used after more detailed analysis and the development of positive measures to correct the problems (1980:3).

South Skyline Loop (Site 3) Proposal: Construct a four-bedroom dormitory between the two houses.

North Skyline Loop (Site 5) Description: This site is located on the hillside below and to the west of 331 Skyline, an existing 1990s-era duplex (Figure 5).

North Skyline Loop (Site 5) Proposal: Construct an eight-bedroom dormitory at this location.

As with Site 3, this area is currently sloped and the surface is composed of unstable expansive (clay) soil. In the 1980 Developed Area Plan and Environmental Assessment, this area (then called site 13) was considered but found to be a location of apparently poor soil that should only be used after more detailed analysis and the development of positive measures to correct the problems (1980:3).

Bureau of Land Management (BLM) Site Description (Beatty, Nevada): Under this alternative, two duplexes and one single-family home would be constructed on BLM managed land north of Beatty, Nevada. Specifically, these structures would be on North Avenue near the junction with A Avenue.

The three to ten-acre area being considered is located on the northern periphery of Beatty, the southeast corner of the lot is at the intersection of A Street and North Avenue. The undeveloped lot is bordered by an unpaved road on the west and a paved road on the south. The land to the east of the lot is owned by the local Water District, to the south is a residential area, and to the west and north are undeveloped public lands managed by the U.S. Bureau of Land Management (BLM), the parcel under consideration is also BLM managed public land. The site itself is associated with significant anthropogenic impacts, including ORV use and illegal dumping activities.

Building on this location would require an agreement with the BLM for using the land via a transfer, lease or acquisition. Initial contacts with the BLM have shown that they are amenable to the idea because the land is “designated for disposal” in the Tonopah Resource Management Plan. Use of the lands would require legal authorities for the National Park Service to secure a sufficient right in this land, currently under the administrative jurisdiction of the Nevada State Office of the Bureau of Land Management, in the southwest ¼ of Section 6, Township 12 South, Range 47 East, Mount Diablo Meridian (Gress 2006).

Because there are no park-specific acquisition authorities for Death Valley that would allow for the transfer of fee simple interest in, or in this case, the withdrawal for park purposes of, land outside and not contiguous to the park boundary, fee acquisition of this land would require an Act of Congress to direct the Secretary of the Interior to transfer permanent administrative jurisdiction of the subject land from the Bureau of Land Management to the National Park Service (Gress 2006).

The most likely authorization for NPS use of the lands would be administrative withdrawal of those lands (Fisher and Seley pers. comm. 2006). This process could take several years and would also require an Act of Congress (legislation) to accomplish because it is not contiguous to the Death Valley National Park boundary (Reynolds pers. comm. 2006). Administrative withdrawal of the land by the NPS would include the transfer of land management to the NPS for a period of years – for example 25 years – but continued ownership by the federal government as BLM managed public lands.

Alternatively, the BLM, under authority of Section 507 of the Federal Land Policy and Management Act of 1976 (FLPMA) (90 Stat. 2781; 43 USC 1767) can issue an assignable temporary right-of-way reservation for a term of years to other public agencies for their exclusive use (Gress 2006). However, when this approach was suggested to the Tonopah Field Station manager, it was determined to be unlikely because, as noted above, the proposed parcel is currently classified in the Tonopah Resource Management Plan as land "designated for disposal" and, in fact, the BLM has undertaken to write an Environmental Assessment on a public sale for 40 acres of adjacent land (Fisher and Seley pers. comm. 2006).

Nonetheless, the right-of-way reservation process was used by another BLM office to allow Mojave National Preserve to use lands for the construction of housing and offices. Under this authority, the BLM issued a right-of-way to Mojave National Preserve, and its assigns, "…*to locate, construct, use, control, maintain, improve and repair an existing employee housing and general storage/maintenance site and access thereto* …" on 5 acres outside the Preserve boundary in Baker, California. There are no fees or rents charged to NPS by the BLM for this right-of-way reservation (Gress 2006).

The right-of-way is for 20 years at which time Mojave National Preserve is responsible for the removal of all improvements, facilities, and related equipment and material, including all toxic and hazardous substances, from the right-of-way. (Note: It is unknown whether the BLM or the Preserve conducted a hazardous materials survey, at the 1995 inception of the right-of-way, to establish an environmental baseline for agency liability.) No mention is made in the terms and conditions of the reservation of a right to renew after 20 years, but it is presumed to be renewable if the improvements are still needed for park housing and maintenance purposes. A previous reservor of the site, the State of California, held the right-of-way reservation for 40 years. The right-of-way reservation grants exclusive administrative jurisdiction to Mojave National Preserve, subject only to outstanding rights of record (for roads, public utilities, etc.), and is fully assignable (without BLM concurrence) by means of any legal instrument available to NPS (Gress 2006).

The right-of-way reservation for the five acres in Baker is broadly written and the Preserve has constructed permanent improvements for employee housing within this temporary right-of-way (Gress 2006).

Therefore, while no land acquisition authority was found that would enable the direct and permanent transfer of Federal jurisdiction of the land in Beatty from the BLM to NPS, it appears that NPS can enter into term agreements for the use of non-NPS land outside park boundaries for the construction of permanent residential and administrative facilities (Gress 2006).

Because the designation and use of BLM managed public land in Beatty would require specific written agreements, these would be reviewed by the NPS Field Solicitor if Alternative 2 were to be selected for implementation.

Bureau of Land Management (BLM) Site Proposal: Construction at this location would require the transfer of a minimum of three acres (to include

sufficient space for the construction of one two-bedroom house and two two-bedroom duplexes). This would include space for the structures and associated walkways, driveways, patios, and yards. Housing designs used for Beatty would be the same as those used for structures within the park.

All utilities would be tied into existing city of Beatty utilities on North Avenue. These utilities would support the construction of these houses.

C. Alternative 3: Construct Dormitories at Salt Pan Vista and House and Duplexes in the Cow Creek Housing Area

General Description: Under Alternative 3, twelve two- and three-bedroom trailers (with 26 bedrooms total) located at Grapevine near Scotty's Castle lost as housing due to condemnation would be replaced at Salt Pan Vista in the Cow Creek Administrative Area (in two eight-bedroom dormitories), with the remaining ten bedrooms replaced as infill within the existing Cow Creek Housing Area (two two-bedroom duplexes and one two-bedroom house). Alternative 3 would result in a 1:1 bedroom replacement of 26 existing bedrooms.

See Alternative 2 for additional site description information.

Siren Site (Site 2) Proposal: Construct a two-bedroom duplex.

South Skyline Loop (Site 3) Proposal: Construct a two-bedroom house.

North Skyline Loop (Site 5) Proposal: Construct a two-bedroom duplex.

Salt Pan Vista (Site 7) Description: This area is outside of the boundary of the Cow Creek Historic District and has been graded for development. It was used as an NPS mobile home housing area until 1997. Currently, the area includes 24 water, sewer and electricity hookups for trailer and recreational vehicle use. These hookups are used by NPS contractors and, when the Sims Circle area is insufficient for demand, overflow volunteer RV parking. The office/warehouse headquarters for the Death Valley National Park Natural History Association (NHA) was constructed here in 1999, in accordance with the Environmental Assessment for Development in the Cow Creek Administrative Area prepared in 1998. Although no fixed housing structures are currently in this location, it has a history of being used for seasonal housing, and a previous plan (the 1980 Cow Creek Developed Area Plan and Environmental Assessment) suggested it for the development of dormitory structures.

Proposed construction at Salt Pan Vista, which would be within the viewshed of Highway 190, a major thoroughfare for park visitors, would require additional vegetation screening or berms to mask the site from the road.

Salt Pan Vista (Site 7) Proposal: Construct two eight-bedroom dormitories.

D. Alternatives Considered But Rejected

Under the National Environmental Policy Act (NEPA) [40 CFR 1504.14 (a)] alternatives may be eliminated from detailed study if they:

- Are technically or economically infeasible;
- Cannot meet project objectives or resolve need for the project;
- Duplicate other less environmentally damaging alternatives;
- Conflict with an up-to-date valid plan, statement of purpose and significance, or other policy; and therefore, would require a major change in that plan or policy to implement; and
- Cause environmental impacts which are deemed too great.

The following alternatives or variations were considered during the design phase of the project, but because they did not meet one of the above criteria, they were eliminated from further analysis.

Seek Housing in Local Communities
This alternative has been pursued, both recently and in past years. The recent housing survey confirmed the park surveys. There is a lack of suitable rentable seasonal housing, especially inexpensive furnished housing, within a reasonable commuting distance (one hour) of many duty stations in Death Valley National Park. Because the area is seasonally dependent on visitors to Death Valley and because of recent mine closures in the nearest town, it is unlikely that this situation will change. Thus, this alternative would not meet the project need to replace the 26 bedrooms being lost to trailer condemnation. It was therefore eliminated from further analysis.

Partner with Private Developers to Construct, Manage, and Maintain Affordable Units for Staff in Beatty, Nevada
This alternative was rejected because the park has been unable to find interested partners. It cannot resolve need for the project.

Construct Dormitories at Salt Pan Vista and Duplexes and House in Beatty, Nevada
This alternative was considered and then fully developed but dismissed because the park would be unlikely to construct housing in a new area (Salt Pan Vista) before infilling in the Cow Creek Housing Area. This Alternative duplicates another less environmentally damaging alternative.

Construct Dormitory Structures in Beatty, Nevada
This alternative was rejected because seasonal employees frequently do not have their own transportation and thus locating them in Beatty raises a number of transportation issues that are not problematic with housing seasonals at Cow Creek. It also was found to be economically infeasible to house Scotty's Castle seasonals in Beatty due to the costs associated with securing and furnishing housing, paying utility costs and commuting both to work and to secure groceries (See *Planning Background* for more information).

Construct Replacement Structures at Scotty's Junction
Scotty's Junction is located at the intersection of U.S. Highway 95 and Nevada State Route 267. Building in this location would require the

construction of new utility systems for sewer, water, electric, and telephone service. Trailer replacement money, the funding source for the current project, although it would provide some money for new or upgraded utilities would not be enough for the construction of significant new utility infrastructure such as would be required. No other source of funds is currently available to install such infrastructure. Therefore, this alternative was removed from consideration primarily because it is economically infeasible.

Construct Replacement Housing in Cooperation with the Timbisha Shoshone Tribe

With the establishment of a permanent tribal land base within their ancestral homeland, the Timbisha Shoshone Tribe has expressed interest in working with the NPS to develop employee housing near Scotty's Junction. This would be a reasonable alternative to an in-park site for the relocation of the Grapevine housing. The Tribe has limited funds and if NPS funds are utilized, the park would utilize the NPS Standard designs. The NPS would have oversight review of planning, design and construction documents.

This has not been a viable option to date because the Timbisha Tribe is not ready to begin requesting funding for this type of project within the next ten years.

Construct Replacement Structures at North Boundary

The North Boundary Site is located on the border of California and Nevada on the north side of Nevada State Route 267. Building in this location would require the construction of new utility systems for sewer, water, electric, and telephone service. Trailer replacement money, the funding source for the current project, although it would provide some money for new or upgraded utilities would not be enough for the construction of significant new utility infrastructure such as would be required. No other source of funds is currently available to install such infrastructure. Therefore, this alternative was removed from consideration primarily because it is economically infeasible.

Construct Replacement Structures on the Current Trailer Sites at Grapevine

During the 1990s, a great deal of study was undertaken examining the option of expanding the existing housing area at Grapevine. Unfortunately this area is no longer considered a viable building site for these replacement housing units because it is bound by two fault traces that are susceptible to rupture (Figure 6). California law requires that no new housing units be built astride active fault traces due to hazards associated with surface rupture. Therefore, the option of building at Grapevine was disqualified due to technical infeasibility.

Construct Replacement Structures at Stovepipe Wells

The prospect of constructing replacement housing at Stovepipe Wells was considered but rejected because the sewer and water systems are currently operating at maximum capacity due to the presence of the existing housing and the concessionaire, which includes a hotel, restaurant, and gift store. The existing system also can not support the structures necessary to fulfill the goals of this project. Trailer replacement money, the funding source for the current project, although it would provide some money for new or upgraded utilities would not be enough for the construction of significant new utility infrastructure such as would be required here. No other source of funds is currently

available to install such infrastructure. Therefore, this option was disqualified because it was technically and economically infeasible.

Construct Replacement Structures at Surprise Spring (Outside the Grapevine Fault Rupture Zone)

Surprise Spring is located to the east of the existing Grapevine Housing Area. It was recommended as an appropriate building site in the seismic report prepared to analyze the Grapevine area for replacement housing (Darwin Myers Associates 1992). This location is highly visible from Bonnie Clair Road and would impact the historic landscape. Building in this location would also require the construction of new utility systems for sewer, water, electric, and telephone service. Trailer replacement money, the funding source for the current project, although it would provide some money for new or upgraded utilities would not be enough for the construction of significant new utility infrastructure such as would be required here. No other source of funds is currently available to install such infrastructure. Therefore, this alternative was removed from consideration primarily because it is economically infeasible.

Physical Sites Dismissed within the Cow Creek Housing Area

A number of sites within the existing Cow Creek housing and administrative areas were considered and rejected, largely due to physical site constraints and natural hazards. An explanation for the rejection is provided with each alternative.

Site 1: This site is located on the hillside south of Old Ghost Road (Figure 5). The Trailer Housing Replacement Committee was initially enthusiastic about the potential for sustainable building in this location because it presented the potential to use berming or building into the embankment, as was done with the CalTrans housing. It was determined, however, that the steep slopes and erodible soils would mean very expensive design and construction. Therefore, this alternative was removed from consideration because it is economically infeasible.

Site 4: This site is located on the hillside across from 328 Skyline (Figure 5). This site was initially thought to be of a reasonable size for one or two duplexes or a house. As with Site 1, the committee was enthusiastic about the potential for sustainable building in this location, by utilizing berming or building into the embankment such as was done with the CalTrans housing. The preliminary site plan analysis determined, however, that the site was too steep to develop economically. Therefore, this alternative was removed from consideration because it is economically infeasible.

Site 6: This site is located on the lot adjacent to Death Valley School and behind the NHA trailer (Figure 7). It was initially thought to be of a reasonable size for a one- or two-story dormitory. Further investigation revealed that this location is in a floodplain. Constructing a residence in a floodplain would result in unacceptable safety risks to the occupants of the building and could create additional impacts by interfering with the proper functioning of the floodplain, making it irresponsible and potentially illegal to construct housing at this site. Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and

potential risk involved in placing facilities within floodplains, including analysis of more suitable sites and the reason for their dismissal. Therefore, this alternative was removed from consideration because it would result in unacceptable environmental impacts and impacts to public safety.

Site 8: This site (Figure 7) is located outside the Cow Creek Historic District and was considered for an eight-bedroom dorm. It is the historic location of two CCC-era structures. Further investigation showed that the area was not large enough for the construction of a dormitory of that size. While a smaller dormitory might have been possible, adding a smaller number of bedrooms at that location did not mix with other locations to provide the needed 16 dormitory rooms. This site, located on a terrace above the existing Cow Creek Administrative Area, would also be highly visible. It was rejected because it did not meet project need and because of its greater environmental impacts.

Volleyball Site (Site 9): Constructing replacement housing at the volleyball site (Figure 7) which is located within the Cow Creek Historic District would have required 1) extension of the historic terraces, 2) conversion of the use of the historic terraces from recreation to housing (eliminating the historic recreational use of the area), and 3) location of housing, essentially within the designated maintenance/administrative area, thereby mixing park administrative uses in a small area – specifically placing residential buildings immediately adjacent to areas currently designated for administrative, maintenance, and recreational functions. A related problem at this location was the potential for disturbance related to traffic along the road that leads to the CalTrans facilities. This activity can occur at all hours of the day or night, but is often concentrated in the morning. There is also the potential for traffic to and from the NPS boneyard.

Construction of the dormitories would also add a structure not originally part of the District's buildings, land use, spatial organization, and cluster arrangement and is considered an adverse effect on the Historic District and on park operations and because of the need, therefore, to develop a Memorandum of Understanding with the California State Historic Preservation Officer to mitigate the adverse effects.

Background

The Cow Creek Historic District is located within the Cow Creek administrative area and includes various features that are historically significant for their association with work accomplished by the Civilian Conservation Corps in the early development of Death Valley National Park. Individual landscape features of the historic district that retain their integrity include natural systems and features, spatial organization, land use, topography, vegetation, circulation, buildings and structures, cluster arrangement, and constructed water features (NPS 2001a). Other facilities in the immediate area of this proposed construction include CC-51 and CC-345. CC-51 is a contributing feature of the Cow Creek Historic District. It was constructed in 1935 and was the first adobe structure built in the complex. Currently, this building houses a metal storage unit for the

climatically controlled storage of museum objects. CC-345 is a non-contributing feature of the District. It is a wood-frame building on a concrete slab with stucco exterior and a standing-seam metal roof. It was constructed in 1999 to serve as the Park's curatorial center.

The Swimming Pool (CC-292) was constructed in 1936 for CCC employees and is located uphill, to the east of the maintenance yard. As noted in the Cow Creek Historic District Historic Structure Report, Death Valley National Park, "a strip of lawn surrounds its south and west sides and palm trees, planted for shade at the west side, provide protection from the adjacent maintenance activities. A set of CCC-built stone steps leads up to the pool from a former parking area on the west side." The report further notes that the pool has received regular maintenance and is in good condition and will remain (NPS 2000).

Although the Cow Creek Historic Structures Report (NPS 2000) does not mention the terraces below the pool, they are mentioned in the more recent Cultural Landscape Inventory (NPS 2001a). The terraces that make up the area below the pool are also contributing landscape characteristics of the historic district. According to the Cultural Landscape Inventory:

> "The stepped terraces and embankments begin at the water reservoir where the water was stored underground. The next terrace was built for the pool and lawn surrounding it. Below the pool is a terrace for building CC-345 and its parking area. This embankment drops down into what becomes the upper maintenance yard.
>
> "[W]hile the maps from the CCC era do not provide information on grade alterations around the pool area, this location had in fact been significantly changed. The surface was graded to accommodate the pool and surrounding lawn area. The embankment was steep enough that stairs were built into it to allow access down the steep slope" (2001a:8 and 9 of 19).

Regarding development in this location, the Cow Creek Historic Structures Report states that, "Any future construction would be compatible with the historic structures within the District, meeting the Secretary of the Interior's Standards for new construction within a National Register Historic District" (2000:42).

Despite this, past park plans have included proposals for additional recreational development in this area. In the Cow Creek Historic Structures Report (2000:42), it was noted that future plans for this location included building a community center or library. The 1980 Developed Area Plan and EA provides more insight into exactly what was planned for these terraces. It was recommended that the activity center be located north of the pool, and that two tennis courts be constructed on the lower terraces.

Building Replacement Housing on Xanterra Property at Furnace Creek

Xanterra Parks and Resorts were contacted in an attempt to see if new housing could be constructed on their property at Furnace Creek Ranch. Xanterra was not interested in pursuing such a partnership. Therefore,

this alternative was removed from consideration because it could not be used to meet project objectives.

Constructing Replacement Housing in the Amargosa Valley

Initially, the prospect of constructing housing outside of the park in the Amargosa Valley was investigated. This location is, however, 85 miles away from Scotty's Castle. It was determined that the length of the required commute made constructing replacement housing in this location infeasible. Therefore, this alternative was removed from consideration because it could not be used to meet project objectives.

E. Environmentally Preferred Alternative

In accordance with Director's Order-12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* and CEQ (Council on Environmental Quality) requirements, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including Environmental Assessments. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the CEQ). The CEQ (46 FR 18026 - 46 FR 18038) provides direction that the "environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101," including to:

1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2) Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4) Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA Section 101(b)).

Generally, these criteria mean the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 – 46 FR 18038).

In this Environmental Assessment, Alternative 3 is considered the Environmentally Preferred Alternative.

Although Alternatives 1, 2 and 3 would all meet criteria 1 and 2 above, Alternative 3 would limit new construction to previously disturbed areas within the park which have been previously designated for park administrative and housing functions, therefore best meeting criteria

3, 4 and 5. In addition, construction for Alternative 3 would minimize the expansion of utility and roadway systems because it would tie in with existing infrastructure. Finally, Alternative 3 would result in housing for Scotty's Castle employees being closer to their worksite.

New construction at the Beatty site identified in Alternative 2 would involve construction on a previously disturbed (but unaffected by construction) natural area that has been identified as adjacent to habitat for the endangered desert tortoise and would therefore fail to best meet criterion 4. Alternative 1 would require Scotty's Castle employees to commute long distances and would therefore not best meet criterion 3 since the consequences of the long-distance commute would require additional pollutant discharge into the environment. Because of the design elements included in the action alternatives regarding building construction and its meeting the Silver LEED level, both Alternative 2 and 3 would equally meet criterion 6.

Figure 1: Eight Bedroom Dormitory Floor Plan

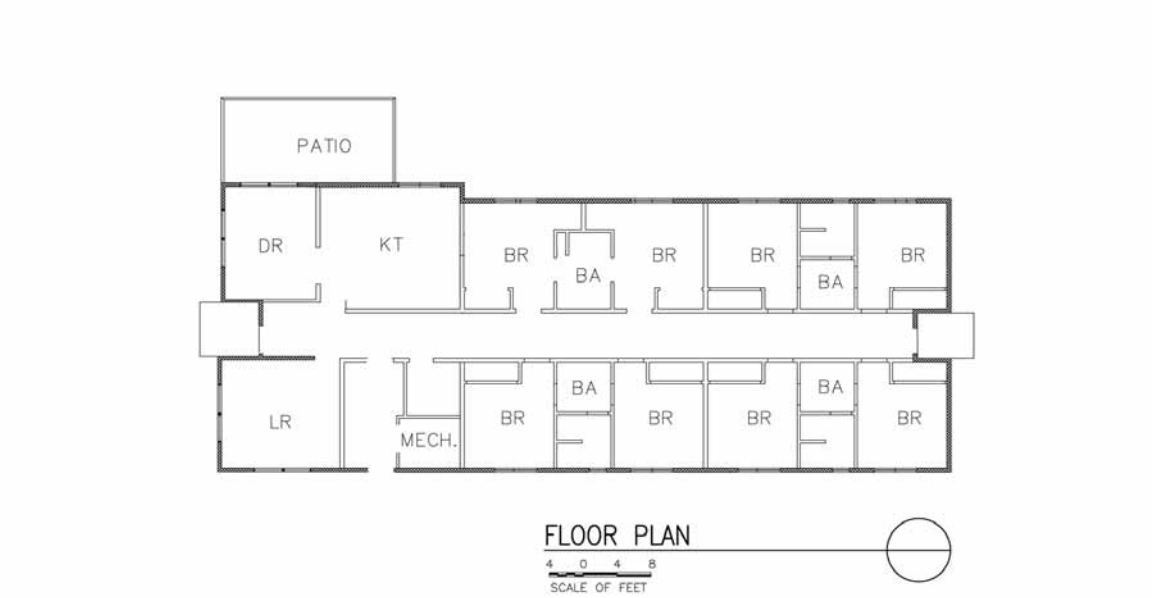


Figure 2: Four Bedroom Dormitory Floor Plan

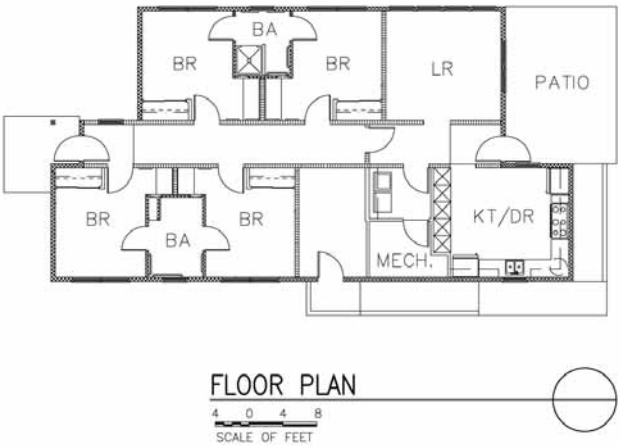


Figure 3: Duplex Floor Plan

Figure 4: Single Family House Floor Plan

Figure 5: Proposed site locations within the Cow Creek Housing Area.

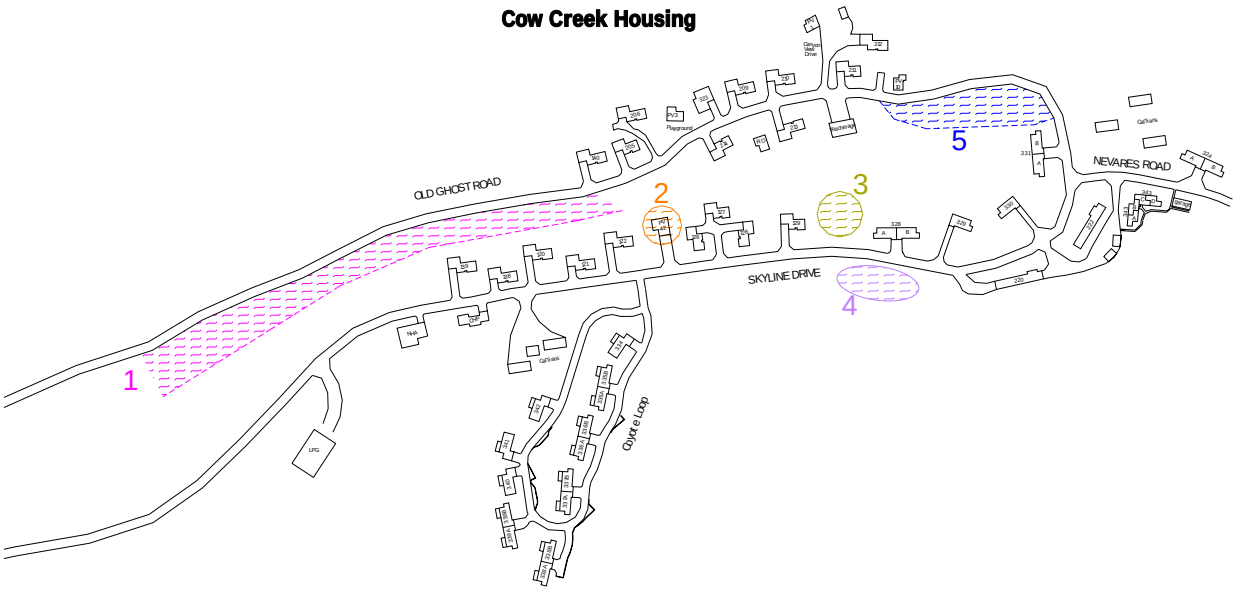


Figure 6: Fault traces at the Grapevine Housing Area.

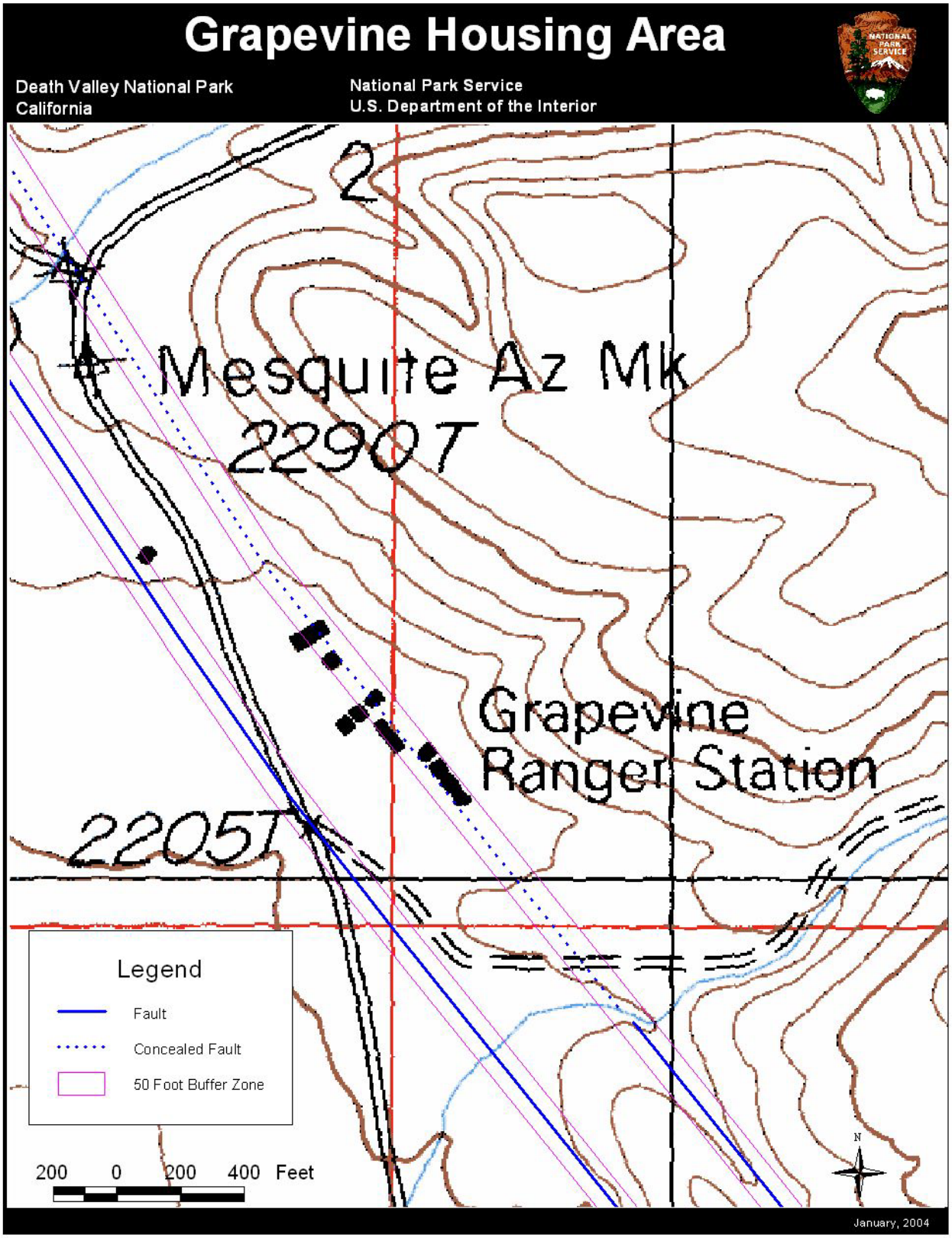


Figure 7: Proposed site locations within Cow Creek

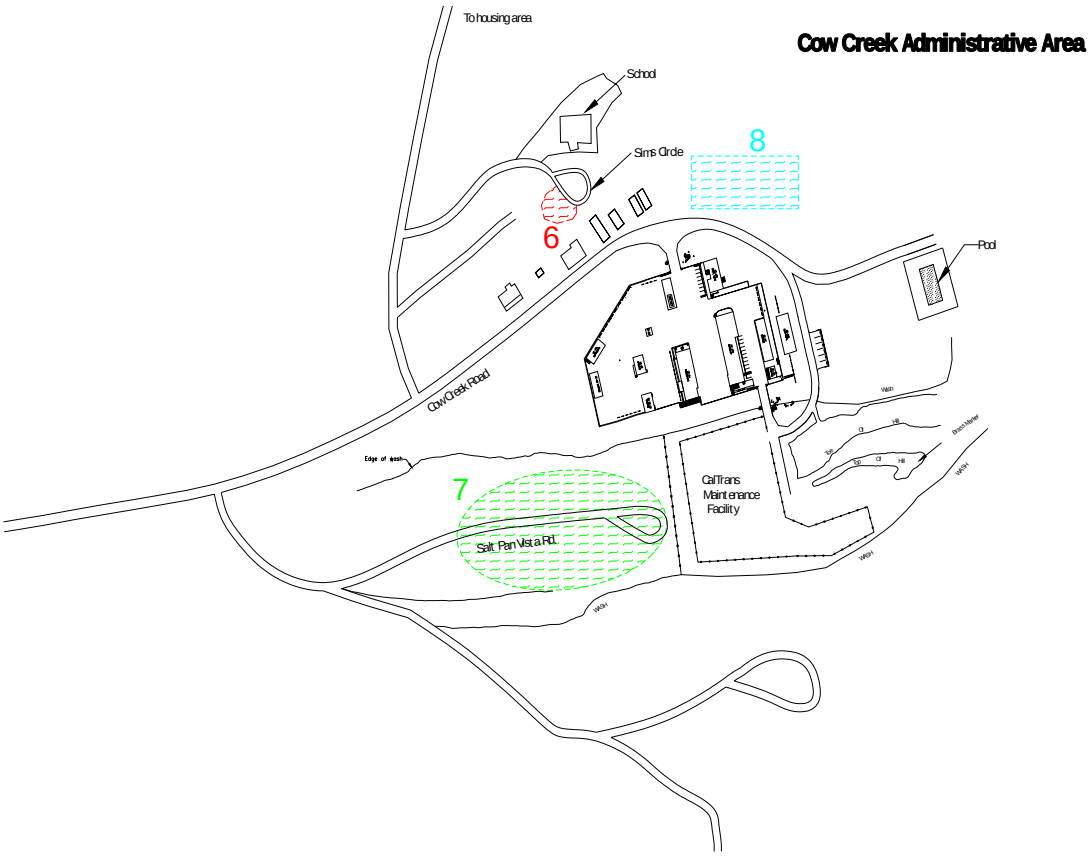
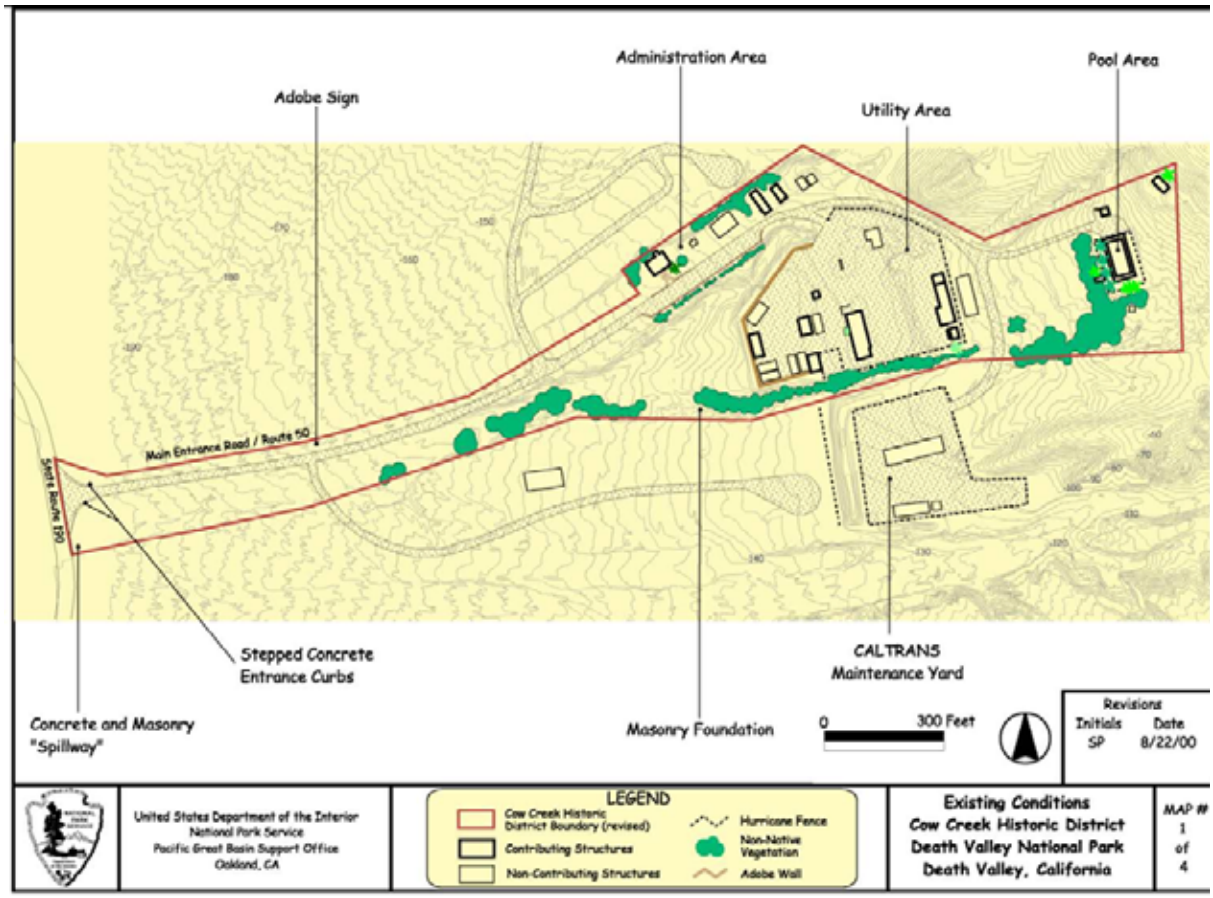


Figure 8 Cow Creek Historic District Boundary



IV. Impact Topics and Methodology

A. Impact Topics Analyzed

Impacts of the alternatives on the following topics are presented in this Environmental Assessment: soils; water resources, including water quality and quantity; vegetation; wildlife; special status species; prehistoric and historic archeological resources; historic structures and cultural landscapes; and park operations.

Land Use: Lands within Death Valley National Park proposed for development are entirely owned by the National Park Service and currently support administrative, maintenance, or residential uses. A series of non-NPS functions, however, are located in the vicinity, including a California Department of Transportation maintenance facility and associated housing, the Death Valley Elementary School (Inyo County School District), an Inyo County Branch Library, and Death Valley Natural History Association office and residence. Land located in Beatty, Nevada and proposed for development under Alternatives 2 and 3 is owned by the Bureau of Land Management.

PHYSICAL RESOURCES

Geology / Geological Hazards: *Management Policies* (NPS 2006) require the NPS to understand geology and geological hazards prior to undertaking development.

Soils: *Management Policies* (NPS 2006) require the NPS to understand and preserve and to prevent, to the extent possible the unnatural erosion, physical removal, or contamination of the soil. The alternatives involve ground-disturbing activities with the potential for erosion or sedimentation impacts to occur. Therefore, soils are addressed as an impact topic.

Water Resources: The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. NPS *Management Policies* provide direction for the preservation, use, and quality of water in national parks.

The Clean Water Act is a national policy aimed at restoring, maintaining, and enhancing the chemical, physical, and biological integrity of the nation's waters and to prevent, control, and abate water pollution. Construction will result in earth disturbing activities, which increases the potential for erosion and sedimentation to occur.

Water Quality: Section 401 of the *Clean Water Act* as well as NPS policy requires analysis of impacts on water quality.

Water Quantity: The increased/decreased use of water to provide for public use may also have an impact on park resources, such as

amphibians. Withdrawal of water from the park's domestic water supply system at Cow Creek is proposed for continued public use in the in-park Alternatives. Water from the public water system in Beatty, Nevada is proposed for use in the alternatives that consider development of housing there.

Wetlands: Executive Order 11990 requires that impacts to wetlands be addressed. There is a small human-created wetland resulting from water treatment plant runoff that meanders through the Cow Creek Housing Area and is adjacent to the South Skyline Loop site (Site 3).

BIOLOGICAL RESOURCES

Vegetation: The *National Environmental Policy Act* (NEPA) calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing, or mitigating potential impacts from proposed projects. The alternatives described in this Environmental Assessment are likely to result in tree and other vegetation removal.

Wildlife: The *National Environmental Policy Act* (NEPA) calls for examination of the impacts on the components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of park native species and communities, including avoiding, minimizing or mitigating potential impacts from proposed projects. More than 403 native species of terrestrial and aquatic vertebrates have been recorded in the park, including 51 species of mammals, 307 birds, 36 reptiles, 3 amphibians, and 6 fishes. Many wildlife species may reside in or near the project area.

Migratory Birds: As noted in the land sale Environmental Assessment (BLM 2006), migratory birds are protected by the Migratory Bird Treaty Act (MBTA). A migratory bird is any species of bird except upland game species, feral pigeons, European starlings, and English house sparrows. Surface disturbing activities during the migratory bird nesting season (April 1st through August 31st) may destroy the eggs or young of ground-nesting migratory birds. Any violation of the MBTA can incur penalties up to $15,000 or 6 months imprisonment, or both per individual offense.

Special Status Species: The *Endangered Species Act* (ESA) requires an examination of impacts to all federally listed threatened or endangered species. NPS policy also requires an analysis of impacts to state-listed threatened or endangered species and federal candidate species. Under the ESA, the NPS is mandated to promote the conservation of all federal threatened and endangered species and their critical habitats within the park boundary. Management Policies include the additional stipulation to conserve and manage species proposed for listing. Ongoing informal consultation with the U.S. Fish and Wildlife Service, and California Department of Fish and Game (Natural Diversity Database) has identified several important rare, threatened and endangered species that occur in Death Valley National Park, including long-eared owls in the Cow Creek Housing Area and the potential for Desert Tortoises at the Beatty, Nevada site.

CULTURAL RESOURCES

Prehistoric and Historic Archeological Resources: Conformance with the *Archeological Resources Protection Act* in protecting known or undiscovered archeological resources is necessary.

Historic Structures/Cultural Landscapes: Consideration of the impacts to cultural resources is required under provisions of Section 106 of the *National Historic Preservation Act of 1966*, as amended, and the 1995 *Programmatic agreement among the National Park Service, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation*. It is also required under *Management Policies* (2006). Federal land managing agencies are required to consider the effects proposed actions have on properties listed in, or eligible for inclusion in, the National Register of Historic Places (i.e., Historic Properties), and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. Agencies are required to consult with Federal, state, local, and tribal governments/organizations, identify historic properties, assess adverse effects to historic properties, and negate, minimize, or mitigate adverse effects to historic properties while engaged in any Federal or federally assisted undertaking (36 CFR Part 800). Requirements for proper management of museum objects are defined in 36 CFR 79.

RECREATIONAL / SOCIAL RESOURCES

Park Operations: Impacts to park operations and visitor services are often considered in Environmental Assessments to disclose the degree to which proposed actions would change park management strategies and methods. There would be a variety of impacts on park operations/park employees associated with the provision of housing as a result of the alternatives in this Environmental Assessment.

B. Impact Topics Dismissed From Further Consideration

The topics listed below either would not be affected or would be affected only negligibly by the alternatives evaluated in this Environmental Assessment. Therefore, these topics have been dismissed from further analysis. Negligible effects are effects that are localized effects that would not be detectable over existing conditions.

Air Quality: Death Valley is a class II air quality area under the Clean Air Act. Class II areas allow only moderate increases in certain air pollutants. Only negligible, temporary (during construction) and negligible permanent (in Alternative 2, with increased commute times from Beatty) air quality impacts would occur from the implementation of the alternatives described in this document. As a result, air quality has been dismissed as an impact topic for this Environmental Assessment.

Floodplains: Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. NPS Management Policies, DO-2 (Planning Guidelines), and DO-12 (Conservation Planning, Environmental

Impact Analysis, and Decision Making) provide guidelines for proposals in floodplains. Executive Order 11988 requires that impacts to floodplains be addressed. There are, however, no floodplains that would be affected by the proposal under any alternative described in this Environmental Assessment. Sites near the school were eliminated from consideration based on their location in a floodplain and the base of a steep canyon according to the following information.

A 1979 USGS study mapped and analyzed floodplains in the vicinity of the Cow Creek Housing Area, including four separate drainage basins, identified as FC-1: Park Village, FC-2A: NPS maintenance area, FC2B: school area, and FC-2C: Cow Creek.

FC-1: The drainage area containing Park Village will likely affect the access road, causing periodic washout to occur, but would not affect the housing area. Although several buildings are located very close to a steep bank along Nevares Creek, they could be threatened by bank erosion from extremely high flows, but not directly by flooding. The housing access road itself is adjacent to the creek, however, and could also be threatened by overwash during high flows (NPS nd).

FC-2A: Based on the Flood Mitigation Study, this drainage would contain all calculated flood flows. Although wash sides could slump into the wash from bank erosion during a flood, development in the area would not otherwise be affected by flood flows.

FC-2B: This drainage contains the school and some mobile homes. According to the Flood Mitigation Study, these structures are “in a significantly hazardous zone” because the 100 year flood would be barely contained in existing ditches. Any flood in excess of 290 cubic feet per second (cfs) would overflow the channel (NPS nd). According to the study, runoff from floods of the 100 year level or above could erode and overflow the existing channel and endanger the school and [the then present] mobile homes. An evacuation plan and mitigation measures are currently being developed.

FC-2C: According to the Flood Mitigation Study (NPS nd), aerial and field reconnaissance and examination of aerial photographs revealed that runoff from FC-2C, the Cow Creek drainage area would not affect any development. Regardless, in a large storm, Highway 190 could wash out. There were no mitigation alternatives developed. The impact of flooding on Highway 190 was considered to be a reasonable risk.

Beatty: As noted in the land sale Environmental Assessment (BLM 2006), the Beatty site is not within or near a floodplain.

Wild Horses and Burros: Effects on wild burros are required to be addressed on BLM lands, where applicable. Although the proposed property in Beatty is located within the Bullfrog Herd Management Area (HMA), there would be minimal modifications to the site if developed under Alternative 2 that would affect the ability of wild burros to use the area. While it is likely that yards for the house and duplexes would be fenced, there would be no external fencing of the property boundary to exclude burros.

As noted in the land sale Environmental Assessment (BLM 2006), “there are no wild horses in the Bullfrog Herd Management Area (HMA). There

are an estimated 41 burros in the Bullfrog HMA. Given the size of the Bullfrog HMA, the potential for encounters between burros and local traffic is minimal." As a result, this topic has been dismissed from further analysis.

Paleontological Resources: Management Policies (NPS 2006) require consideration of impacts to paleontological resources if applicable. Dinosaur tracks, mammal tracks, camel bones and other paleontological resources have been found in Death Valley National Park. Although camel bones were reportedly found behind the teacher's duplex in the 1990s, none have been found associated with other construction in the Cow Creek Housing area, and the 1998 Paleontological Survey for Death Valley stated that no paleontological reports have been made in the Cow Creek area (Nyborg 2006). Based on the proposal it is unlikely that additional paleontological resources would be found (Nyborg 2006). No paleontological resources were found on the parcel associated with the BLM land sale Environmental Assessment and none are expected to be found associated with the current parcel. As a result, there is no further analysis of paleontological resources. If paleontological resources, however, were uncovered at either site during excavation work, additional analysis of the significance of the find would occur as appropriate according to each agency's procedures.

Ethnography: Death Valley National Park and the surrounding area have a long history of use by prehistoric and contemporary Native Americans. Analysis of impacts to known resources is important under the *National Historic Preservation Act* and other laws. The National Park Service defines ethnographic resources as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (DO-28, *Cultural Resource Management Guideline*, p. 181). The proposed action would have no effect on known ethnographic resources in the park or at the Beatty site. If the Beatty site were to become the proposed action, additional consultation with Native American Indians would occur to ensure that there would be no effect.

Mineral Potential: Because there is a potential for marketable mineral deposits to be found on the Beatty property a minerals survey would be performed at the site prior to any further action being taken by NPS if Alternative 2 was selected for implementation. As noted in the land sale Environmental Assessment (BLM 2006): "FLPMA 209(b)(1) describes the allowance and means to convey mineral interests owned by the United States to the prospective surface owner when a parcel leaves federal ownership if it is proven there are no known mineral values in the land, or if the reservation of mineral rights in the name of the United States would interfere with or preclude appropriate non mineral development of the land and that such development is a more beneficial use of the land than mineral development."

Museum Collections: Management Policies and other cultural resources laws identify the need to evaluate effects on National Park Service Collections if applicable. The collections at Death Valley National Park would not be affected by the proposed project, except by the potential addition of material for the collections if any is found (see mitigation

measures under *Archeological Resources* in the *Environmental Consequences* section).

Visitor Experience: Based on *Management Policies* (2006), impacts to visitors are considered with respect to park undertakings. There would be no impacts to visitors as a result of the implementation of the alternatives described herein. Structures built in some locations may impact the viewshed and detract from visitors enjoying the scenery (see Park Operations).

Wilderness: Approximately 95 percent of Death Valley National Park is designated wilderness. Congress designated this area in 1994. NPS wilderness management policies are based on provisions of the 1916 NPS Organic Act, the 1964 Wilderness Act, and legislation establishing individual units of the national park system. These policies establish consistent service-wide direction for the preservation, management, and use of wilderness and prohibit the construction of roads, buildings and other man-made improvements and the use of motorized vehicles in wilderness. All park management activities proposed within wilderness are subject to review following the minimum requirement concept and decision guidelines. The public purpose of wilderness in national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition, as well as for the purposes of recreational, scenic, scientific, education, conservation, and historical use. There would be no impacts to wilderness from the implementation of the alternatives described herein. Structures built in some locations may be visible from wilderness. This impact is considered negligible in the context of existing development already present at Cow Creek, both within the Administrative area and in the Housing area.

Beatty: The Beatty site is not located within designated or proposed wilderness.

Socioeconomics: Socioeconomic impact analysis is required, as appropriate, under NEPA and NPS Management Policies pertaining to gateway communities. The local and regional economy and most business of the communities surrounding the park are based on tourism and resource use. Agriculture, mining, manufacturing, professional services, and education also contribute to regional economies. There would be no measurable effects to regional or gateway community economies, or changes in visitor attendance or visitor spending patterns as a result of the implementation of the actions described herein. Building in some locations may cause a negligible beneficial or adverse impact on the economy of gateway communities. Housing availability would have a negligible impact on NPS or Beatty infrastructure.

Prime and Unique Farmlands: No unique agricultural soils are believed to exist in the vicinity of the project areas due to their presence in an extremely arid environment.

Environmental Justice: Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This Executive Order does not apply to the subject of this Environmental Assessment. The actions

evaluated in this Environmental Assessment would not adversely affect socially or economically disadvantaged populations.

Energy Consumption: Implementation of any of the alternatives analyzed in this document would have negligible effects on the overall consumption of electricity, propane, wood, fuel oil, gasoline or diesel fuel associated with visitation or park operations and maintenance.

Night Sky/Noise: There would be no or negligible impacts to the Night Sky and no permanent impacts to the existing audible environment. All lighting associated with the proposed construction under any alternative would be minimized and directed inward and downward to conform to existing NPS and park policies. No consistent noise generation would be realized under any alternative.

C. Methodology

This section contains the methods / criteria used to assess impacts for specific resource topics. The definitions of impacts adhere to both that generally used under the National Environmental Policy Act to describe impacts as well as those used by Section 106 of the National Historic Preservation Act and that used under Section 7 of the Endangered Species Act.

The National Environmental Policy Act (NEPA) requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. The *Environmental Consequences* section analyzes the environmental impacts of project alternatives on affected park resources. These analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts.

Impairment

In addition to determining the environmental consequences of the preferred and other alternatives, NPS *Management Policie*s (NPS 2006) and Director's Order-12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*, require analysis of potential effects to determine if actions would impair park resources. The following sections from Management Policies define impairment and highlight the difference between an impact and impairment.

1.4.3 The NPS Obligation to Conserve and Provide for Enjoyment of Park Resources and Values

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values. However, the laws do give the Service the management discretion to allow impacts to park resources and values when necessary

and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values.

The fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States. The enjoyment that is contemplated by the statute is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.

1.4.4 The Prohibition on Impairment of Park Resources and Values
While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.

1.4.5 What Constitutes Impairment of Park Resources and Values
The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to 0pportunities for enjoyment of the park, or

- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park. . .

1.4.6 What Constitutes Park Resources and Values
The "park resources and values" that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

1.4.7 Decision-making Requirements to Identify and Avoid Impairments
Before approving a proposed action that could lead to an impairment of park resources and values, an NPS decision-maker must consider the impacts of the proposed action and determine, in writing, that the activity will not lead to an impairment of park resources and values. If there would be an impairment, the action must not be approved.

ENVIRONMENTAL IMPACT ANALYSIS
The environmental consequences for each impact topic were defined based on the following information regarding context, type of impact, duration of impact, area of impact and the cumulative context. Unless otherwise stated at the beginning of the resource section in Environmental Consequences, analysis is based on a qualitative assessment of impacts.

- **CONTEXT**: Setting within which impacts are analyzed – such as the project area or region, or for cultural resources – the area of potential effects (as defined under implementing regulations for Section 106 of the National Historic Preservation Act).

- **TYPE OF IMPACT:** A measure of whether the impact will improve or harm the resource and whether that harm occurs immediately or at some later point in time.
  - **Beneficial**: Reduces or improves impact being discussed.
  - **Adverse**: Increases or results in impact being discussed.
  - **Direct**: Caused by and occurring at the same time and place as the action, including such impacts as animal and plant mortality, damage to cultural resources, etc.
  - **Indirect**: Caused by the action, but occurring later in time at another place or to another resource, including changes in species composition, vegetation structure, range of wildlife, offsite erosion or changes in general economic conditions tied to park activities.

- **DURATION OF IMPACT**: Duration is a measure of the time period over which the effects of an impact persist. The duration of impacts evaluated in this Environmental Assessment may be one of the following:

  - **Short-term**: Often quickly reversible and associated with a specific event, from one to five years.
  - **Long-term**: Reversible over a much longer period, or may occur continuously based on normal activity, or for more than five years.

- **AREA OF IMPACT**
  - **Localized**: Detectable only in the vicinity of the activity
  - **Widespread**: Detectable on a landscape scale (beyond the affected site)

- **CUMULATIVE**: Cumulative impacts are the effects on the environment that would result from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions. Impacts are considered cumulative regardless of what agency or group (federal or non-federal) undertakes the action.

The Council on Environmental Quality (CEQ) describes a cumulative impact as follows (Regulation 1508.7):

> *A "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

The cumulative projects addressed in this analysis include past and present actions, as well as any planning or development activity currently being implemented or planned for implementation in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine if they have any additive effects on a particular resource. Because most of the cumulative projects are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. The projects considered in the cumulative impacts analysis include:

- Removal of two non-contributing Quonset Huts within the Cow Creek Historic District (Approved by the California State Historic Preservation Officer February 23, 2006)
- Furnace Creek Water System Environmental Impact Statement
- Removal of two residences within the lower Cow Creek Housing Area (PV-3 and PV-42) (Approved by the California State Historic Preservation Officer February 20, 2006):
- Environmental Assessment for Exotic Plant Control
- Stovepipe Wells Visitor Center Construction
- Stovepipe Dunes Visitor Use Area Environmental Assessment
- Trailer Housing Replacement, Coyote Loop

In addition, there are two currently active Bureau of Land Management projects in the Beatty area. The first is nearly complete and the second has undergone public review but has not yet been approved.

Title: U.S. Barrick Bullfrog Mine Closure
Location: Nye County
Description: Barrick Bullfrog Mine open pit-cyanide vat-leach operation suspended mining/milling operations in November 1999.
Status: Reclamation is mostly completed; remaining closure tasks at the mine include the long term draindown of the tailing impoundment and final transfer of selected parcels and buildings to the town of Beatty Economic Development Board and Death Valley National Park. [*Note: The NPS did not accept the proposed land due to the fact that it contained additional structures to be maintained.]*
Contact: George Deverse, Tonopah Field Station

Title: Roland Land Sale
Location: Nye County
Description: 7.5 acre direct sale in the Beatty Area.
Status: Appraisal update/review completed. Parcel to be offered for sale, upon publication of Notice of Realty Action (NORA).
Contact: Wendy Seley, Tonopah Field Station

❖ **IMPACT MITIGATION**

Impacts may be avoided, minimized or mitigated to diminish their scope. Park managers may:

- **Avoid** conducting management activities in an area of the affected resource.
- **Minimize** the type, duration or intensity of the impact to an affected resource.
- **Mitigate the impact by**
  - **Repairing** localized damage to the affected resource immediately after an adverse impact;
  - **Rehabilitating** an affected resource with a combination of additional management activities; or
  - **Compensating** a major long-term adverse direct impact through additional strategies designed to improve an affected resource to the degree practicable.

❖ **INTENSITY OF IMPACT**

All Impacts Except Special Status Species and Cultural Resources

Note: Special Status Species and Cultural Resources impact determinations are formally determined under the Endangered Species Act (Section 7) and the National Historic Preservation Act (Section 106), respectively. Cultural resources impacts are also initially characterized as noted below, however the conclusion follows the format under Cultural Resources Impacts, *and makes a formal determination of effect under Section 106 of the National Historic Preservation Act. In accordance with National Park Service Management Policies analysis in this Environmental Assessment fulfills the responsibilities of the National Park Service under Section 106 of the National Historic Preservation Act.*

- **Negligible:** Measurable or anticipated degree of change would not be detectable or would be only slightly detectable. Localized or at the lowest level of detection.
- **Minor:** Measurable or anticipated degree of change would have a slight effect, causing a slightly noticeable change of approximately less than 20 percent compared to existing conditions, often localized.
- **Moderate:** Measurable or anticipated degree of change is readily apparent and appreciable and would be noticed by most people, with a change likely to be between 21 and 50 percent compared to existing conditions. Can be localized or widespread.
- **Major:** Measurable or anticipated degree of change would be substantial, causing a highly noticeable change of greater than approximately 50 percent compared to existing conditions. Often widespread.

Special Status Species

- **No Effect:** The project (or action) is located outside suitable habitat and there would be no disturbance or other direct or indirect impacts on the species. The action will not affect the listed species or its designated critical habitat (USFWS 1998).
- **May Affect, Not Likely to Adversely Effect**: The project (or action) occurs in suitable habitat or results in indirect impacts on the species, but the effect on the species is likely to be entirely beneficial, discountable, or insignificant. The action may pose effects on listed species or designated critical habitat but given circumstances or mitigation conditions, the effects may be discounted, insignificant, or completely beneficial. Insignificant effects would not result in take. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur (USFWS1998).
- **May Affect, Likely to Adversely Effect:** The project (or action) would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (USFWS 1998).

Cultural Resources Impacts

- **No Effect**: The action will not affect historic properties nor will it affect the characteristics that may qualify historic properties for inclusion on the National Register of Historic Places. The action would also not, based on conditions of

approval, likely result in impacts to presently unidentified cultural resources.

- **No Adverse Effect**: An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. For example, the action may result in diminishing the character-defining features or aspects of a historic structure that make it eligible for the National Register, but the actions are consistent with the Secretary's Standards for the Treatment of Historic Properties.
- **Adverse Effect**: An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. In other words, the effects on character-defining features or aspects of a historic structure would result in diminishing or removing the characteristics that make it eligible for the National Register of Historic Places and as a result would not be consistent with the Secretary's Standards for the Treatment of Historic Properties.

V. Affected Environment

Information in this section is derived from a comprehensive review of existing information pertaining to the project area within the park and additional information about the nearby town of Beatty, Nevada. It includes information from the General Management Plan (NPS 2002), various natural and cultural resources management plans, and other park planning documents. Specific sections from these documents are cited appropriately in the text and the bibliographic information has been placed in the *References* section of this document. Most information in this section has been gained from research and analysis throughout the history of Death Valley National Park.

A. Land Use

Lands proposed for development are owned either by the National Park Service or the Bureau of Land Management.

National Park Service: Those owned by the National Park Service are currently managed for administrative, maintenance, or residential uses and are located in Death Valley National Park. A series of non-NPS functions are also located in the vicinity, including a California Department of Transportation maintenance facility and associated housing, the Death Valley Elementary School (Inyo County School District) and associated teacher housing, an Inyo County Branch Library, housing for a California Highway Patrol officer, and Death Valley Natural History Association office and residence.

Bureau of Land Management: Lands owned by the Bureau of Land Management are currently open space located directly adjacent to the town of Beatty, Nevada. These lands are contiguous with other BLM managed public lands under the jurisdiction of the Tonapah Field Station, Battle Mountain Field Office. The Tonopah Field Station manages approximately 6.1 million acres of federal land. Under the most recent resource management plan, they are "designated for disposal," a use that is compatible with the proposed project.

DESCRIPTION OF AFFECTED OR PROPOSED DEVELOPED AREAS

Grapevine

Grapevine is located in the northeastern part of the park, three miles south of Scotty's Castle. This is currently the main housing area for NPS employees working at Scotty's Castle. In addition to the twelve trailers for NPS housing, there are also two trailers reserved for use by concession employees. Other facilities at Grapevine include a two-room ranger station adjacent to the highway, a highway entrance kiosk, maintenance facility, and a small storage building. As noted in the *Purpose and Need*, many of the trailers at Grapevine that used to house park employees have been condemned, and the remaining trailers are proposed for condemnation due to repair costs that exceed their assessed value. Their replacement is the subject of this Environmental Assessment (NPS 2004:14).

Cow Creek Area Administrative, Maintenance and Housing Areas

The areas within Cow Creek Developed Area that are being analyzed in this document have either been previously developed or subject to some site disturbance associated with development.

Administrative, Maintenance and Housing functions are arrayed in four primary areas separated by terrain – including 1) the administration / maintenance yards and the adjacent CalTrans maintenance yard, 2) the Cow Creek Housing Area, 3) Salt Pan Vista – the location of the Death Valley Natural History Association Office and trailer / recreational vehicle hookups for seasonals, contractors and volunteers, and 4) the school / seasonal trailer housing area (Figures 5 and 7). Two of these areas are the subject of potential housing development proposals discussed in this Environmental Assessment – the Cow Creek Housing Area and Salt Pan Vista. Areas not proposed for development include the school / seasonal trailer housing area because it is located within an extreme floodplain (an area subject to flash flooding) and the Cow Creek Administrative / Maintenance area because development would impact the Cow Creek Historic District.

Cow Creek Housing Area

The main housing area is located a little above sea level on a ridge above, though hidden from, much of the rest of the Cow Creek development. This housing area includes five units owned by CalTrans (California Department of Transportation), two units for Inyo County teachers, and one unit each for the California Highway Patrol resident and the Death Valley Natural History Association business manager. Under a cooperative agreement, the National Park service provides maintenance and utilities to the housing units owned by the California Highway Patrol and Death Valley Natural History Association.

Proposed construction sites within the Cow Creek Housing area include: the Siren Site (Site 2), the South Skyline Loop (Site 3), and the North Skyline Loop (Site 5).

Siren Site (Site 2): This site along Skyline Drive (Figure 7) is the location of a condemned CCC-era two bedroom house (Park Village (PV)-42) and associated landscape elements including vegetation, rock walkways and steps, and a fountain. PV-42 was nominated to the National Register of Historic Places in 1989 as one of seven structures in the Park Village Historic District (or Cow Creek Residential Area). The nomination form describes the building as follows:

> "This simple structure, constructed in 1937, was of wood construction with interior walls of plywood, wooden floors, and a tarpaper roof. Originally consisting of two rooms, kitchen, and bath, it presently contains five rooms with 820 square feet. Numerous changes have been made to the original structure. A laundry room with concrete floor and wood paneled walls has been added on the west side of the house on the upper level during 1988. The overhang roof for this area is also new. Board and batten paneling has been added over the original exterior walls.
>
> "The original rectangular building had a stove and a screened porch area with entrance door on the south end. The porch was enclosed and a large brick fireplace added by 1951 in the middle of the south end wall. An L-shaped addition has been added off the northwest end, housing a bedroom on the upper level. At the north end of the structure, the kitchen in the northeast corner has been extended north. The kitchen contains 1940s-era cabinetry.

> A new bath was added on the north end as well as the master bedroom in the L-shaped addition. The original bathroom is now a hallway and closet area. The interior of the house has its original finish. The lower storage level of the L-shaped addition is sided with corrugated metal and the entranceway faces a high retaining wall made of salvaged adobe bricks."

In May of 1989, PV-42 was found to be ineligible to the National Register of Historic Places as part of the Park Village Historic District (Appendix X – SHPO letter). At that time, PV-42 was considered to have been so heavily altered that it did not retain character-defining features that would convey the structure's historic significance. PV-42 was never nominated as an individual structure. Based on this information, the State Historic Preservation Office has agreed that demolishing the structure, while leaving the associated stonework, would have *no adverse effect* on the CCC district (Appendix X – SHPO letter).

South Skyline Loop (Site 3): This site (Figure 7) shows signs of previous ground disturbance, and water pipes and associated valves are exposed on the surface in this location. According to anecdotal evidence from park staff, when the duplex at 328 Skyline was constructed, a CCC-era spring box was covered to create the flat, buildable surface that the building foundation now rests on. The water pipes and valves at the surface of the present project area, which is below and west of 328 Skyline, are likely also associated with the CCC-era spring box. If this site was used for construction, the proposed treatment for these artifacts associated with previous water system development would be determined in consultation with park and State of California cultural resources experts. Treatment would include documentation of the materials and collection of those that would be buried by construction. If any items were found to be of unique value, they would be collected and added to the park museum collection.

North Skyline Loop (Site 5): This site (Figure 7) is located on the hillside below and to the west of 331 Skyline, an existing 1990s-era duplex. Although no previous development is known to have taken place at this site, the site exhibits obvious disturbance, including grading of a terrace that extends east towards the South Skyline site. The disturbance is likely a result of fill placement associated with constructing the duplex above it. Even so, it contains some natural vegetation, including a two relatively large mesquite trees and numerous desert holly plants.

Cow Creek Administrative/Maintenance Area

Southwest of the main housing area are the maintenance facility, law enforcement offices and other emergency services (fire and ambulance bays), resource management offices, museum/library, Death Valley Natural History Association office and warehouse, CalTrans maintenance facility, and a water reservoir / swimming pool. The Cow Creek Developed Area also contains an elementary school (K-6), a small building housing the Inyo County Branch Library and approximately 47 transient trailer sites for use by seasonal employees, volunteers and contractors (split between the Salt Pan Vista site and the School / Seasonal Trailer site).

Salt Pan Vista Site (Site 7): Salt Pan Vista (Figure 7) has been developed for trailer hook-ups and also is the location of the Death Valley Natural History Association building. The 1980 Cow Creek Developed Area Plan and Environmental Assessment indicated that Salt Pan Vista would be retained for trailer use for the foreseeable future. It was, however, noted that if additional sites for apartment or dormitory housing should become necessary in the future, and housing policy changes made it possible, that this area could be converted from trailer to dormitory use (1980:4). In any event, the plan makes clear that Salt Pan Vista was intended to serve as a location for seasonal housing, whether in trailers or in more permanent structures.

The 1998 Environmental Assessment for Development in the Cow Creek Administrative Area summarizes potential impacts associated with developing the Salt Pan Vista location. Impacts for this area were limited to seismic issues and visibility issues. Seismic issues were to be mitigated by digging a five-foot deep trench at each of the building sites. This trench would extend beyond the building's footprint, and would be perpendicular to the nearby fault traces. Certified earthquake hazard geologists from the USGS would examine the trench prior to construction. If a slip fault structure were identified, the building footprint would be moved to avoid the fault. Visibility issues were to be mitigated by adding a screening earthen berm and landscape vegetation. Night lighting was to be designed so as not to be visually intrusive (1998: 8-9)

Beatty, Nevada

Nevada is one of the fastest growing states in the nation, with Nye County being the largest in the State. Within the ninety-three percent of the county managed by the federal government, are large areas administered for specific purposes, including the Nevada Test Site, national forests, and Death Valley National Park (BLM 2006).

Beatty is currently a small town and is at an economic crossroads in planning for its future. During the past century, mining has come and gone. When the Bullfrog gold mine closed (1999), many people in this small community were forced to leave due to economic hardship. A small grocery market had been located in the town until two or three years ago, but it has since been closed. The town currently contains schools (kindergarten through high school), a post office and some small businesses. A large candy/ice cream shop and motel were recently constructed on the edge of town. Beatty residents must currently drive to Tonopah (95 miles) or Pahrump (75 miles) to purchase groceries.

According to information presented by the BLM in their recent Beatty Land Sale EA (BLM 2006), with the increasingly competitive landscape for gambling dollars, Beatty is searching for ways to diversify their economy. Beatty is close to Death Valley National Park and the ghost town of Rhyolite. Each year nearly 100,000 tourists are welcomed through its historic streets. As a major gateway to these areas, an opportunity exists to attract tourism dollars that may come from park visitors, as well as birding enthusiasts, destination-oriented outdoor recreationists, history and culture buffs, geology enthusiasts, construction, retail sales, and industrial opportunities for employment (BLM 2006).

Additional information provided by the BLM (2006) notes that currently the Town of Beatty is the fourth most populated town in Nye County. Realty agents of Beatty expect the population to continue to grow as both the population and land values in areas such as Las Vegas and Pahrump continue with strong growth and residents seek lower land values and less populated areas (BLM 2006).

In addition, according to BLM (2006), as Las Vegas and the Pahrump Valley areas continue to grow, an increase in tourism, recreational opportunities, and entrepreneurs could occur in Beatty. Beatty is attractive to the retired population due to the climate, the small rural environment, and land values that are more affordable than the Pahrump and Las Vegas areas. People ages 65 and over comprise approximately 11.8% of Nevada residents. The population between the ages of 70 - 74 is increasing the fastest, and additional residential housing development is needed (BLM 2006).

Land available for potential housing construction in Beatty is BLM managed public lands on the edge of the town of Beatty. The proposed property is located on North Avenue near the junction with A Avenue.

This land is currently zoned “designated for disposal” under the BLM’s Tonopah Resource Management Plan. Proposed use by the park has been investigated several times in the last ten years. Until recently, however, the park did not seriously pursue an agreement with the BLM. The proposed use of this land for National Park housing appears to be compatible with BLM objectives; however, additional information is needed to determine whether such use would eventually result in a right-of-way agreement, special use permit or transfer/purchase of the land from the BLM.

As described in BLM’s Land Sale Environmental Assessment (BLM 2006): The project area is located along the western side of the Oasis Valley within the Amargosa River drainage. The local area is within the northeastern portion of the Mojavian Floristic Region with a creosote bush (*Larrea tridentata*) and shadscale (*Atriplex confertifolia*) community. Most of Nevada, including the project area, is within the Basin and Range Physiographic Province which is characterized by elongate mountain ranges and intervening valleys arranged generally in a north-south parallel pattern. The Mojave Desert is characterized by hot, dry summers and cool, dry winters. Average precipitation of 3.5 inches occurs sporadically from either winter rains or summer thundershowers.

OTHER NEARBY PARK DEVELOPED AREAS

Furnace Creek Area

Furnace Creek, located along Highway 190 in the east-central area of the park 62 miles from Pahrump, Nevada and 41 miles from Beatty, Nevada, is the largest and most heavily visited development. The park’s Visitor Center and administrative offices are located there, adjacent to a private inholding of 341.9 acres operated as the Furnace Creek Inn and Ranch resort by Xanterra Parks and Resorts. The resort includes a post office, hotel and motel (combined accommodations of 294 rooms), two swimming pools, up to four restaurants (number varies by season), a general store, gift shops, the Borax museum, showers, a laundromat, service station, stables, tennis courts, an 18-hole golf course, and housing for Xanterra employees (NPS 2004:14).

Immediately south of the Xanterra property are 314 acres recently transferred from the National Park Service to the Timbisha Shoshone Tribe and encompassing the present Timbisha Village Site. A small amount of housing owned by the Tribe for tribal members is located within this reservation.

Besides the Visitor Center and administrative offices, the park has three campgrounds and a paved airstrip in the Furnace Creek area. Housing for park employees is primarily located three miles north of Furnace Creek at Cow Creek, although other park housing is located at Stovepipe Wells and Grapevine.

Scotty's Castle

Scotty's Castle is located 55 miles north of Furnace Creek in the northeastern area of the park. It is managed as a historical/museum site and is a major visitor attraction offering regularly scheduled living history and other themed tours of the Castle. The complex includes an exhibit room/bookstore and concessioner-operated snack bar, gift shop and service station. Two NPS employees are housed in an historic duplex originally designed for overnight guest accommodations. Up to ten concession employees are housed in a triplex converted from six motel units (NPS 2004:14).

The nearest well-developed community (based on the definition of an NEC [Nearest Established Community] designation is Tonopah, Nevada which is located 87 miles away. (A NEC or nearest established community is a city or town having a year-round population of 1,500 or more (5,000 in Alaska), provided that it has minimal essential medical facilities, at least one licensed/certified general practicing medical doctor and one licensed/certified dentist available to the public on a year-round, non-emergency basis.) Other nearby communities include Beatty, Nevada (no amenities) located 55 miles from Scotty's Castle and Pahrump, Nevada (all amenities) which is 120 miles from Scotty's Castle.

Stovepipe Wells

Stovepipe Wells is located approximately 20 miles northwest of Furnace Creek in the central portion of the park. It includes an NPS visitor contact station, housing for park employees, a campground, and a small runway. Also present are a concessionaire-operated restaurant, hotel, gift shop, and service station. Housing for the Xanterra employees is also located at Stovepipe Wells.

VIEWSHEDS

As required by the GMP (NPS 2002:19), development guidelines for park developed areas will establish visual consistency and themes in facility development. Visual compatibility with surrounding landscapes, significant architectural features, and site details is important (NPS 2002:19).

Although there is no visitor activity within the Cow Creek Administrative Developed Area, State Highway 190, the primary park circulation route passes within 750 feet of the western limits of the development. Although the primary views are to the west, away from the development, the impact of developments on the views from this highway have been considered in previous development projects in the area (NPS 1980).

According to the Cow Creek Developed Area Plan and Environmental Assessment (NPS 1980), the lower part of the Cow Creek development is closer to the road and is not as well screened by landforms as is the upper area. That upper area is partially hidden by low hills and both natural and introduced vegetation. Screen planting and a wall diminish the visual impact of some of the lower other housing and administrative structures. A large berm was constructed to conceal the CalTrans maintenance facility from the road to/from Furnace Creek. For proposed construction at Salt Pan Vista, which would be within the viewshed, additional mitigation to screen development would be required.

B. Geology / Geological Hazards

Death Valley National Park includes all of Death Valley, a 156-mile-long north/south-trending trough that formed between two major block-faulted mountain ranges: the Amargosa Range on the east and the Panamint Range on the west. Telescope Peak, the highest peak in the Park and in the Panamint Mountains, rises 11,049 feet above sea level and lies only 15 miles from the lowest point in the Western Hemisphere in the Badwater Basin salt pan, 282 feet below sea level. Death Valley National Park is world renowned for its exposed, complex and diverse geology and tectonics, and for its unusual geologic features. There are five major sand dune complexes within the Park representing all types of dune structures, making it one of the only places on earth where this variety of dune types occurs in such close proximity. The Eureka Dunes include the highest dunes in California (NPS 2004:23-24, NPS 2002).

Death Valley, which is geologically part of the Basin and Range Province, exhibits much of the geology associated with the earth's history, including evidence of many geological eras. It contains rocks from 1.8 billion years ago to mountains formed 500 million years ago; to evidence of a warm shallow sea that covered much of the area between 570 and 250 million years ago; to evidence of formation of the existing landscape three million years ago; to recent volcanic activity at Ubehebe Crater from several thousand years ago; and finally to ongoing erosion and uplift occurring today (NPS 2002: 25).

The project area is located on the Chloride Cliff (California and Nevada) 15 minute USGS quadrangle, in Township 27 North, Range 1 East, in the northeast corner of Section 34, or on the Nevares Peak 7.5 minute quadrangle.

The Cow Creek area is located in the foothills of the Funeral Mountains, a portion of the Amargosa Range. The Funeral Mountains rise east of the Cow Creek area, with peaks over 5,000 feet.

Cow Creek contains numerous young faults and movement on the faults appears to have occurred repeatedly during the last several thousand years (Klinger 1998). In 1998, a Bureau of Reclamation geologist/geomorphologist recommended undertaking the construction of several exploratory trenches, one at each proposed building location by a geologist with expertise in Quaternary stratigraphy. According to the recommendation, each trench should be oriented perpendicular to the local strike of known fault traces and dug at a depth appropriate to the age of the sediment being trenched and a length adequate to

intersect any faults in the area of the building site (Klinger 1998). With mapping of the stratigraphy (layers of soil/rock), any fault traces would be exposed and their timing documented in detail.

As a result, in 1998, a series of four trenches were dug within the Cow Creek Administrative Area at Salt Pan Vista, Volleyball court parking area, Boneyard, and North site (north of Old Ghost Road) to analyze the likelihood that proposed development areas were located on faults. None were found.

According to a report prepared by Darwin Myers Associates (1992:14), a fault zone was noted to cross the Grapevine Ranger Station study area that makes this area unsuitable for development. Evidence included 1) geomorphic features characteristic of faulting, 2) subsurface data gathered for the investigation, and 3) findings of previous consultants. Most of the Grapevine Ranger Station area possesses closely spaced fault traces. According to the study, within this area, there is a relatively high risk of earthquake damage from surface fault rupture. It concluded that some developable land may exist within the area classified as high risk but additional studies would be required to identify its extent.

C. Soils

According to the 1980 Cow Creek Developed Area Plan and Environmental Assessment, the lower areas of Cow Creek, where maintenance, administrative and recreational facilities are planned consists of weathered volcanic ash (bentonite) and uplifted lakebed sediments with an alluvial fan near the eastern edge of the valley. Because bentonite, a clay, expands and contracts, existing Caltrans housing and maintenance structures were built on a 1-2 foot deep bedding pad of soil imported from another location in the park (p.6-7).

Soil development is very poor, owing to an extremely arid environment, with approximately 1.8 inches of annual rainfall (NPS 1998a). Soils mapping is referred to in this Environmental Assessment as being complete that year (1998) for specified park sites.

The areas proposed for development are a mixture of gravelly alluvial fan material and bentonite. Although soils survey information is not completely available, bentonite (clay) soils were observed on the North and South Skyline Drive sites. Bentonite soils are extremely expansive soils that require deep excavation to remove them) prior to foundation placement, which in turn results in a need to place fill.

D. Water Resources

1. Water Quantity

According to the General Management Plan (NPS 2002:21), ground water is found throughout the park and varies greatly in depth and quality. Groundwater is recharged from both surface and subsurface infiltration. Groundwater is the principal source for desert springs, seeps, and streams. Maintenance of groundwater quality is critical to the

survival of desert plant and animal life. The park's groundwater comes from both Nevada and California. Based on existing appropriations, the NPS has determined that it is likely that the groundwater is either fully or over appropriated. There is some concern about contamination of groundwater sources from the Nevada Test Site and the Bullfrog Mine, however, investigations have so far reported that no contamination is present.

Surface water in the park consists of seeps, wells, springs, and ponds. These offer isolated and limited water sources for plants, wildlife, domestic animals, or commercial ventures. Prior to the expansion of the park (1972) via the California Desert Protection Act, approximately 330 water sources of varied dependability and quality were recorded in the park. Most were found in the Cottonwood, Panamint, and Grapevine mountains. New lands include additional water sources in Darwin Creek, Saline Warm Spring, and numerous springs in the Nelson Range and Whippoorwill Flat areas of the Inyo Mountains.

Perennial streams include Salt Creek, Furnace Creek, Cottonwood Creek, and Darwin Creek. The Amargosa River, though perennial, also flows underground for short stretches and varies seasonally.

Cattle ranching, mining, and resort and park development have contributed to changes in the natural concentration of water in the park. Flows have been diverted, dammed, excavated, etc. Diversions have resulted in changes to or the loss of riparian plants and animals associated with the water sources.

Park water uses, as noted earlier, will be the amount necessary to achieve park purposes, including the efficient and frugal use of water. All water withdrawn for domestic use will be returned to the park watershed once it has been treated.

The park water supply at Cow Creek is a spring-fed creek (Nevares), where raw water is pumped through a gravity-fed reverse osmosis water filtration system. It contains a 350,000 gallon water tank and the flow of approximately 150 gallons per minute is more than sufficient for the park's existing administrative needs and for proposed expansion (existing needs comprise approximately 108,000 gallons per day).

The park water supply at Stovepipe Wells is at capacity and cannot be expanded for additional housing without significant infrastructure development (additional water treatment capacity).

2. Water Quality

Although some springs in the park produce potable water, overall, water quality in the park is poor due to high concentrations of dissolved minerals. Water produced for park uses at Cow Creek consistently meets all state and federal drinking water quality standards. Water is treated by reverse osmosis to meet safe drinking water standards.

3. Wetlands

Three wetlands are located in the general vicinity of the Cow Creek Administrative and Residential areas, two of these, the Nevares Spring wetland and an artificial wetland associated with runoff from the

swimming pool (NPS 1998a), are outside the project area. The third wetland is an artificial wetland located adjacent to the proposed South Skyline Drive building site. This is created by runoff from the water treatment plan. It contains fan palms, athels, oleanders, and other non-native vegetation. Water flow varies but is usually present from autumn to spring.

E. Vegetation

The diversity of Death Valley's plant communities results partly from the region's location in the Mojave Desert, a zone of tension and overlap between the Great Basin Desert to the north and the Sonoran Desert to the south (Kearney and Peebles 1960 from NPS 2004). This location, combined with the great relief found within the Park, from 282 feet below sea level to 11,049 feet above sea level, supports vegetation typical of three biotic life zones: the lower Sonoran, the Canadian, and the Arctic/Alpine in portions of the Panamint Range (Jepson 1923; Storer and Usinger 1968). Based on Munz and Keck (1968) classifications, seven plant communities can be categorized within these life zones, each characterized by dominant vegetation and representative of the three vegetation types: scrub, desert woodland, and coniferous forest. Microhabitats further subdivide some communities into zones, especially on the valley floor (NPS 2004:24).

Scrub is the most extensive vegetation type in Death Valley. It dominates approximately 75 percent of the park's landscape. Plant community types within scrub include alkali sink, creosote bush scrub, shadscale scrub, and sagebrush scrub. The alkali sink (salt flat) community occurs in the lowest elevations of the park (NPS 2002:27).

As noted above, desert woodland and coniferous forest are the two other vegetation types found in the park. These types are not found in the proposed project area under any alternative. Because they would not be affected, they are not described here, however, brief descriptions can be found in the General Management Plan (NPS 2002: 27).

Cow Creek Vegetation

Nearby plant communities include scattered creosote bush scrub and shadscale scrub. Palm and tamarisk trees were introduced in the 1920s and are common in the area. The Cow Creek Housing Area contains non-native salt cedar (*Tamarisk ramosissima*), California fan palms, Palo Verde, and scattered native shrubs, including mesquite and desert holly. Except for occasional mesquite and desert holly, most buildings sites are generally devoid of vegetation. Two large mesquite trees are present at the North Skyline Loop site and non-native athel is present at the Siren site.

Beatty Vegetation

According to BLM (2006), in the Beatty, Nevada area, there are non-native species growing on road shoulders and other disturbed areas, such as gravel pits. Halogeton (*Halogeton glomerata*) and Russian thistle (*Salsola kali*) are the dominant non-native species. According to BLM (2006), the land sale site, which is adjacent to the Beatty site, however, is characterized by Mojave Desert scrub. Predominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), shadscale (*Atriplex confertifolia*), and Anderson wolfberry (*Lycium andersonii*).

Park Housing Vegetation Tenets

The following information is taken from the park's Housing Management Plan (NPS 2004:74):

> The housing units are gradually being xeriscaped. Current units with lawns must be maintained by the tenant, with a reminder to please not over-water because water is a precious commodity in the desert and some over-watering has been known to cause flooding in other residences.
>
> It is park policy to reduce or eliminate exotic pest plants (e.g. invasive, high-water consuming or physically destructive) throughout the park, including those found in developed areas (e.g., Cow Creek employee housing area) areas unless there is documentation that individual plant specimens have cultural resource significance, and the plants were part of the original intent and fabric of the site. The following guidelines were developed to prevent further exotic plant invasions, and to protect the park's native vegetation, natural habitats, and significant cultural sites. These guidelines apply to those wishing to incorporate landscaping at their residences:
>
> - Consistent with National Park Service Policy, the park will use native plants from genetically and ecologically related park populations for restoration and landscaping. Exceptions to this policy include the use of sterile exotic plants for temporary erosion control or when there are no other choices and there is a benefit to providing a vegetated cover in a developed area. Developed areas, as used here, include previously or currently human-disturbed areas associated with roads, trails, dwellings, etc.
>
> - Ecological restoration projects, and the plant material used, will be recommended by a Division Chief, reviewed by the Park Management Team, the Environmental Review Committee, and approved by the Superintendent. Only native plant species, as defined in the above guideline, will be used in restoration projects.
>
> - Any use of exotic plants must be approved by the Superintendent. Plant species must not be listed as noxious weeds by the U.S. Department of Agriculture (USDA), NPS, California Exotic Pest Plant Council (CalEPPC), California Department of Food and Agriculture, or be considered locally invasive by the Park Botanist.
>
> - Plant material used for landscaping in NPS-administered developed areas will be approved prior to use by the Chiefs of Maintenance and Resources. Superintendent approval is required for landscape changes that would increase water usage and/or the use of exotic plants.
>
> - Landscaping with plants purchased from a commercial nursery is discouraged because of the high probability of introducing pests (e.g. red imported fire ant) and/or pathogens into the park. Using NPS-operated nurseries to grow project-specific native

plants, such as those operated by Joshua Tree and Grand Canyon, is encouraged.

- Proposals to alter or eradicate biotic (exotic or native plants) cultural resources associated with significant cultural sites will be recommended by a Division Chief, reviewed by the Park Management Team and the Environmental Review Committee, and approved by the Chief of Resources and the Superintendent. All treatments to cultural landscapes will preserve significant physical attributes, biotic systems, and uses contributing to the historical significance.

- The park only allows the following animals to carry supplies and/or people: horses, mules, burros, oxen, llamas, and camels. In accordance with California Food and Agriculture Code Section 5101 & 5205 for the Certification of Weed Free Forage, Hay, Straw, and Mulch, the park requires that any hay or straw brought into the park be certified weed free. This rule also applies to non-stock uses of straw. This program is locally administered by the county agricultural commissioners.

F. Wildlife

Death Valley National Park and the adjacent desert support a variety of wildlife species, including 51 species of native mammals, 307 species of birds, 36 species of reptiles, three species of amphibians, and six species of native fishes (NPS 2002:26 in Hansen 1972 and 1973; Landye 1973).

Vertebrates present in Death Valley include reptiles, rodents, small carnivores, and birds. Wildlife common to the lower elevations include reptiles such as the speckled rattlesnake, chuckwalla, horned lizard, western whiptail, and desert iguana; small mammals include kitfox, coyote, ground squirrel, jackrabbit, desert cottontail, kangaroo rat, and mice (Deal 1987:6). At higher elevations, animals include bighorn sheep, mule deer, mountain lion, bobcat, and grey fox, and rarely, pronghorn antelope. It is likely that some of the larger species, most notably bighorn sheep and pronghorn antelope, occurred in greater populations in the past. Feral burros, the descendants of animals introduced to the area by early prospectors, have dominated bighorn sheep habitat in the recent past, but are currently being removed from the valley (Bergstresser pers. comm. 2006).

Birds include raptors, the common raven, small birds, and resident and migratory waterfowl. Small fish known as pupfish, inhabit some of the perennial springs throughout the valley.

Wildlife concerns regarding Cow Creek housing include habitat for aquatic invertebrates (in running or ponded water such as the overflow from the water treatment plant) and birds, particularly a pair of long-eared owls, a sensitive species, that have nested in the trees in the lower housing area.

The long-eared owl (*Asio otus*), a State Species of Special Concern, was once a common to abundant permanent resident in many parts of

California, but its numbers had begun to decline by the 1940's (Grinnell and Miller 1944) and continued through the present. Habitat requirements for this species are riparian or other thickets with small, densely canopied trees for roosting and nesting. Proximity of this habitat to meadow edges for hunting also enhances quality. It is a transient visitor to Death Valley and is only occasional observed (NPS 2005: F-13). Suitable habitat for this species occurs within the riparian corridors of Cow Creek.

Beatty Site: The project area provides habitat for wildlife including black-tailed jackrabbit, badger, coyote, various rodents, songbirds, birds of prey, and lizards, similar to that occurring in the Cow Creek area, although without the species present in higher elevations in the park. This type of habitat is common throughout the region (BLM 2006).

G. Special Status Species

1. Special Status Plants

Although Death Valley National Park contains a range of species listed by the U.S. Fish and Wildlife Service or the State of California or considered sensitive in the park, none of these special status plants occur within the project area (Linda Manning pers. comm. 2006). Many are confined to specific habitats such as the Eureka Dunes or the Amargosa River. None would be affected by the implementation of the proposed project under any alternative.

COMMON NAME *SCIENTIFIC NAME*	**STATUS***				**HABITAT OCCURRENCE / NOTES**
	FEDERAL	**STATE**	**CNPS**	**OTHER**	
Eureka Dunes Evening Primrose *Oenothera californica ssp. eurekensis*	FE	CR	1B	--	This species does not occur in the project area. Recovery plan available. They would not be affected by the proposed project under any alternative.
Eureka Valley Dunegrass *Swallenia alexandrae*	FE	CR	1B	--	This species does not occur in the project area. Recovery plan available. They would not be affected by the proposed project under any alternative.
Spring-loving Centaury *Centaurium namophilum*	FT	Rare Ash Meadows National Wildlife Refuge, Nevada	--	--	Found near Devils Hole and in the Amargosa River watershed (not within the project area). They would not be affected by the proposed project under any alternative.
Ash Meadows Sunray *Enceliopsis nudicaulis var. corrugata*	FT	SE Nevada	3	--	Found near Devils Hole and in the Amargosa River watershed (not within the project area).
Ash Meadows Gumplant *Grindelia fraxino-pratensis*	FT	Watch List Nevada	1B	--	Found at Devils Hole and in the Amargosa River watershed. They would not be affected by the proposed project under any alternative.
Shining Milk-vetch *Astragalus lentiginosus var.*	--	--	1B	--	Found on dunes at Eureka and Panamint Valleys. They would

micans					not be affected by the proposed project under any alternative.
Sodaville Milk-vetch *Astragalus lentiginosus sesquimetralis*	--	SE California Nevada	1B	--	Known from Big Sand Spring in Death Valley National Park, and two locations in Nevada. They would not be affected by the proposed project under any alternative.
July Gold *Dedeckera eurekensis*	--	CR	1B	--	Found on limestone outcrops, 3500-7000' in the Last Chance Range, Panamint Mountains, White and Inyo Mountains. They would not be affected by the proposed project under any alternative. .
Rock Lady *Maurandya petrophila*	--	CR	1B	--	Found in Titus and Fall Canyons. They would not be affected by the proposed project under any alternative.
Amargosa Niterwort *Nitrophila mohavensis*	FE	CE NV CE CA	1B	--	Found in the Amargosa River watershed. They would not be affected by the proposed project under any alternative.
Alkali Mariposa Lily *Calochortus striatus*	--	--	1B	--	Found in the Amargosa River watershed. They would not be affected by the proposed project under any alternative.
Tecopa Bird's Beak *Cordylanthus tecopensi*	--	--	1B	--	Found in the Amargosa River watershed. They would not be affected by the proposed project under any alternative.
White Bear Poppy *Arctomecon merriamii*	--	--	2	--	Found in the Amargosa River watershed and near Scotty's Castle. They would not be affected by the proposed project under any alternative.

*Definitions

Federal

Endangered (FE): Species in danger of extinction throughout all or a significant portion of its range
Threatened (FT): Species likely to become endangered within the foreseeable future throughout all or a significant part of its range
Candidate (FC): Species is a candidate (proposed) for threatened or endangered status
Species of (Local) Concern (SC/SLC): Species of Concern to the Sacramento USFWS Office
De-listed (FD): Species that has been taken off the Endangered Species List

State

Endangered (SE): Species in danger of extinction throughout all or a significant portion of its range in the state
Threatened (ST): Species likely to become endangered in the foreseeable future throughout all or a significant portion of its range in the state
Rare (plants only) (SR): A native plant, not currently threatened with extinction, present in small numbers throughout its range, which may become endangered if its present environment worsens

California Native Plant Society (CNPS) codes

CNPS 1A: Plants Presumed Extinct in California
CNPS 1B: Plants Rare, Threatened or Endangered in California and Elsewhere
All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species

Act) of the California Department of Fish and Game Code, and are eligible for state listing.
CNPS 2: Plants Rare, Threatened or Endangered in California, but more common Elsewhere With List 2, CNPS recognizes the importance of protecting the geographic range of widespread species. All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing.
CNPS3: Plants About Which CNPS Needs More Information – A Review List
CNPS4: Plants of Limited Distribution – A Watch List

CNPS RED Codes
These codes represent the different factors that contribute to the list assignments. They are:
Rarity – the number of individuals and their distribution within California;
Endangerment – the plant's vulnerability to extinction for any reason; and
Distribution – the overall range of the plant.

Together these three elements form the **R-E-D** Code. Each element is divided into three classes or degrees of concern, represented by the number 1, 2, or 3. In each case, higher numbers indicate greater concern.

2. Special Status Wildlife

COMMON NAME *SCIENTIFIC NAME*	STATUS*			HABITAT OCCURRENCE / NOTES
	FEDERAL	STATE	OTHER	
Mammals				
Nelson Bighorn *Ovis Canadensis nelsoni*		SC	--	See information below.
Mojave Ground Squirrel *Spermophilus mohavensis*	--	ST California	--	The only known occurrence of this species in the park is at Lee Flat. The northwestern Mohave Desert is the northernmost extension of the squirrel's range. Because this species does not occur within the project area, there would be no effect on it.
Birds				
Southwestern Willow Flycatcher *Empidonax trailli extimus*	FE	SE California	--	Found in small numbers in riparian vegetation along the Amargosa River and in Death Valley. Affected by brown-headed cowbird nest parasitism. Recovery plan available. They would not be affected by the proposed project under any alternative.
Least Bell's Vireo *Vireo bellii pusillus*	FE	SE California	--	Found in small numbers in dense riparian vegetation along the Amargosa River and in Death Valley. Affected by brown-headed cowbird nest parasitism. Recovery plan available. They would not be affected by the proposed project under any alternative.
California (western) Yellow Billed Cuckoo *Coccyzus americanus occidentalis*	FC	SE California	--	Found in small numbers along the Amargosa River and in Death Valley. Requires well-developed extensive riparian habitat. They would not be affected by the proposed project under any alternative.
Willow Flycatcher *Empidonax trailli*	--	SE	--	Found in dense willow thickets. Affected by brown-headed cowbird nest parasitism. Range may overlap with Southwestern Willow Flycatcher. They would not be affected by the proposed project under any alternative.

Reptiles				
Desert Tortoise *Gopherus agassizii*	FT	SE California	--	See information below. Recovery plan available.
Amphibians				
Black Toad *Bufo exsul*	--	ST	--	Introduced into salt marsh at Saline Valley, may be extirpated. Would not be affected by proposed project at any location.
Fish				
Devils Hole Pupfish *Cyprinodon diabolis*	FE	SE Nevada	--	Devils Hole pupfish are found near a spring complex known as Ash Meadows, part of the Ash Meadows National Wildlife Refuge, in a detached area managed by the Death Valley National Park. They would not be affected by the proposed project under any alternative.
Cottonball Marsh Pupfish *Cyprinodon salinus milleri*	--	ST California	--	This species is found only in Death Valley in portions of Cottonball Marsh on the west side of the central valley floor, approximately five miles south of Salt Creek (NPS 2002:29 citing NPS 1988). It does not occur within the project area and would not be affected under any alternative.
Invertebrates				
Devils Hole Warm Springs Riffle Beetle *Stenelmis calida calida*	SC		--	Found at Devils Hole. They would not be affected by the proposed project under any alternative.
Amargosa Tryonia Snail *Tryonia variegata*	SC		--	Found at Devils Hole. They would not be affected by the proposed project under any alternative.

***Definitions**

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Candidate (FC): Species is a candidate (proposed) for threatened or endangered status

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State

Endangered (SE): Species in danger of extinction throughout all or a significant portion of its range in the state

Threatened (ST): Species likely to become endangered in the foreseeable future throughout all or a significant portion of its range in the state.

Nelson Bighorn: Bighorn occur in desert mountain ranges where terrain includes rolling hills for feeding and nearby cliffs in steep canyons that can be used for escape. According to the General Management Plan (NPS 2002:26), their range does not correlate with any specific vegetation type. The park's population is estimated to be between 500 and 1,000 animals and is likely declining. The cause of the possible decline has not been determined, however the introduction of livestock diseases, poor range conditions, a rapid rise in human activity, illegal hunting, and inadequate water supply may be contributing factors. Others include competition with other animals and loss of habitat related to springs drying up. According to the General Management Plan, it is also possible that the bighorn are not declining and that variable census methodology is to blame for an observed fluctuation in population counts.

Bighorn sheep are designated Species of Special Concern by the California Department of Fish and Game because of their low numbers and their sensitivity to human disturbance. Bighorn sheep densities are determined by the amount and quality of vegetation across the landscape, however, water is a limiting resource. Most bighorn sheep biologists believe that bighorn sheep must drink water each day. Available water cannot drive a herd to increase in size, however, if an area has ample vegetation, but no water, bighorn sheep cannot persist. Threats to the species include tamarisk invasion of springs and resource competition with feral burros. They are occasionally seen near the Cow Creek Developed Area. They would not be affected by the proposed project under any alternative.

Desert Tortoise: The desert tortoise occurs in the Mohave and Sonoran deserts in southern California, southern Nevada, the southwestern tip of Utah, and Sonora and northern Sinaloa in Mexico. Death Valley contains some of the Mojave population of desert tortoises, those living north and west of the Colorado River. Critical habitat for desert tortoises occurs in the vicinity of the park but is not designated in the park because it is considered a protected area.

Desert tortoises are primarily found in valleys and on bajadas in the park, habitats characterized by scattered shrubs. Soils, ranging from sand to sandy gravel are most used, however caliche soils, desert pavement and rocky, boulder terrain are occasionally used. Tortoises, spend a large part of time underground avoiding predators and hot temperatures and are most active in the spring, early summer, and fall, when annual plants are available and daily temperatures are tolerable. They can also be found during warm weather in the winter and after summer rainstorms (NPS 2002: 27 citing BLM 1996). Desert tortoises are active in Nevada from approximately March 1 through October 31 (USFWS 2003:31). No critical habitat has been designated on public lands managed by the Tonopah Field Station (USFWS 2003:32).

The Mojave populations of the desert tortoise are threatened by habitat loss, habitat degradation (exotic weeds), mining, grazing, off-road vehicle use, and construction projects (roads, powerlines, etc.).

Desert Tortoise have not been observed in the Cow Creek Housing Area or at Salt Pan Vista. Desert Tortoise (both animals and sign) have been observed adjacent to the BLM site in Beatty, Nevada.

Use of the Beatty site would need to conform to a U.S. Fish and Wildlife Service Programmatic Biological Opinion (1-5-01-F-570) dated March 14, 2003 (BLM 2006).

Migratory Birds: As noted in the land sale Environmental Assessment (BLM 2006), potential migratory bird species that may be found in the project area in Beatty would include but are not limited to the Ash-throated Flycatcher, Bewick's Wren, Black-headed Grosbeak, Black-throated Gray warbler, Black-throated Sparrow, Blue-gray Gnatcatcher, Brewer's Sparrow, Brown-headed Cowbird, Bushtit, Cassin's Finch, Chipping Sparrow, Common Raven, Costa's hummingbird, Gray Flycatcher, Horned Lark, House finch, House Sparrow, House Wren, Le Conte's Thrasher, Lesser Goldfinch, Loggerhead Shrike, Mourning Dove, Northern

Mockingbird, Rock Wren, Sage Sparrow, Say's Phoebe, Spotted Towhee, Swainson's thrush, Vesper Sparrow, Western Scrub-jay, and the White-crowned sparrow.

H. Prehistoric and Historic Archeology

The Park contains an unusually high number of well-preserved prehistoric archeological sites, including rock art and alignments (NPS 2004:24) as well as a great number of historic archeological sites associated with transportation corridors, water sources, mining and ranching.

1. Prehistoric Archeology

With minimal survey of the lands within the park boundary (less than 10 percent) over 2,000 prehistoric archeological sites have been identified, representing approximately 10,000 years of human activity. Archeological sites include house circles, habitation areas, complex sites, rock shelters, campsites, workshops, quarries, lithic scatters, hunting blinds, plant food processing stations, storage pits, cemeteries and burial areas, rock art (pictographs and petroglyphs), rock alignments, and rock traps or caches. Some of the highest concentrations have been found in Butte Valley, Mesquite Flat, the floor of Death Valley, Grapevine Canyon, high elevation areas in the Panamint Mountains, alluvial fans on the west side of Death Valley and at springs.

Although numerous draft National Register nomination forms have been prepared for archeological districts in the park, none have yet been designated. Districts considered eligible include: Butte Valley, Mesquite Springe, Racetrack-Goldbelt, Ubehebe Crater, Upper Emigrant, Upper Panamint, Death Valley Salt Pan, Furnace Creek, Mesquite Flat, Grapevine Canyon, Ibex Spring, Keane Wonder Mine, Saratoga Springs and Lower Vine Ranch (NSP 2002:38). None of these areas would be affected by the proposed actions in this Environmental Assessment.

Initial archeological surveys were conducted in the Cow Creek area in January 1979 by Caltrans staff (NPS 1980: 8). In October 1979, an NPS archeological survey was also conducted. No archeological resources were found in either survey and both surveys were submitted to the State Historic Preservation Officer, and the projects associated with them allowed to proceed under a *no effect* determination.

No prehistoric or historic Native American sites are known to exist within the Cow Creek Historic District, however the location of the spring and extensive prehistoric sites in the surrounding area indicate the likelihood that pre-contact Native American use occurred (NPS 2001a).

It is unknown whether prehistoric or historic Native American sites exist at the Beatty site. According to the Land Sale Environmental Assessment (BLM 2006), one site considered ineligible for the National Register was found on this adjacent parcel. If selected as the preferred approach archeological surveys would be conducted and information resulting from them added to the decision document.

2. Historic Archeology

Despite the Cow Creek Historic District, no historic archeological resources were found in a survey to analyze the effect of constructing fault trace trenches, to evaluate seismic hazards associated with the proposed construction in October 1998 (NPS WACC 1998).

Archeological survey of proposed building sites has located the following visible signs of Civilian Conservation Corps development of the Cow Creek Developed Area.

Skyline Drive Site: At the proposed building site on Skyline Drive, remnants of the former Cow Creek water system are present, including metal piping and a valve. According to park staff, an historic spring house was found when the Cow Creek Duplex CC-329 was constructed. It was buried by the construction of that dwelling.

Siren Site: The common name of this site is derived from the presence of a former air raid siren on a utility pole located behind the proposed building site located at PV-42. According to park staff it was installed during the CCC era. In addition, although PV-42 has been approved for removal, the building currently remains, along with a variety of stone work and plantings from the CCC era. Flagstone walkways, an adobe wall and an apparent water feature (former fountain) exist at the site (see Historic Buildings/Cultural Landscapes below for more information).

I. Historic Structures / Cultural Landscapes

Many historic properties exist within Death Valley National Park. Most historic properties eligible for the National Register have been nominated and are now listed on the National Register of Historic Places. Unique to Death Valley are numerous mining sites associated with a continuum of mining activities from at least the 1860s to the present. Many of these historic mining resources are of particular significance either because similar resources are not found elsewhere within the National Park System or because they are in a better state of preservation than examples found elsewhere (NPS 2004:24). Other historic properties are associated with the early development of Death Valley National Park, including those associated with the Civilian Conservation Corps (CCC), occurring in the Cow Creek project area.

Cow Creek Historic District

Description: The Cow Creek Historic District is a designed landscape of approximately two acres located four miles north of Furnace Creek Ranch encompassing a portion of the administrative and maintenance area at Cow Creek. Because the work accomplished by the CCC extended from 1933 to 1942, this is its period of significance. Individual landscape characteristics which retain integrity include natural systems and features, spatial organization, land use, topography, vegetation, circulation, buildings and structures, cluster arrangement and constructed water features (NPS 2001a). According to the CLI, only small scale features have been altered to such a degree that they no longer contribute to the integrity of the district as a whole.

The Cow Creek area was initially the location of two CCC camps that were eventually combined. A Cow Creek utility area between the Funeral Range and Cow Creek camps was one of the first components of the Death

Valley CCC camp to be constructed (in 1934-35). This "corporation yard" first housed a temporary service garage, blacksmith shop, wash rack, radio hut and housing for the power plant. After Cow Camp burned in 1936, the Cow Creek and Funeral Range camps were consolidated and work began on the monument's master plan (NPS 1989).

Significance: The Cow Creek Historic District remains are significant for their association with the CCC and with the implementation of that program in Death Valley under Company 530, a 200-plus man unit of enrollees from Ohio and Kentucky, and Company 529, both from the San Bernardino National Forest. Later these groups were succeeded by Companies 1240 and 1246 in the fall of 1934. The CCC was responsible for opening Death Valley to the public by improving access, constructing NPS administrative and visitor use facilities, installing utility systems, and by serving informally in staff positions. When the park was established in 1933, there was no attendant financial support for adequate staffing or administrative development. Visitor facilities constructed by the CCC include roads, trails, entrance stations, campgrounds, and picnic areas (NPS 1989).

Several Cow Creek buildings are also significant because they are representative of the NPS architectural development during the 1930s and 1940s, when CCC enrollees constructed buildings and structures under the professional supervision of NPS landscape architects and engineers (NPS 1989).

In addition to those structures constructed for NPS or visitor services, buildings and structures listed on the National Register either comprised camp facilities or were somehow connected with CCC daily life or recreational activities (NPS 1988). They were adobe structures, simple wooden structures, Portland "porta-perm' buildings, and stonework. The use of adobe structures, in particular, conformed to NPS efforts of the 1930s rustic architecture period because of its use of available and durable "native" designs and materials, including native and drought-tolerant non-native species in landscaping.

Historic District Boundary/Circulation: The west end of the Cow Creek Historic District Boundary begins just west of the intersection of the Park Village road with the Cow Creek Administrative Road and includes the adobe entrance sign. The northern length of the boundary stretches east and west from the sign behind the resource management office, CC-145, CC-321, CC-39 and CC-49. It turns south at Point B and follows a line for 1/8 mile south along the east side of the reservoir. It turns west at Point C and follows along just south of the adobe wall around the maintenance yard and returns to the west boundary at Point D (NPS 1989) (Figure 8). This boundary encompasses the CCC-built structures in the administration and corporation yards, including the administration building, wooden warehouses on the north side of Cow Creek Road and the adobe and wood structures in the walled maintenance area. It also includes the hydroelectric plant, the water reservoir, and the swimming pool as well as the historic roadway circulation.

This boundary was revised per the Cultural Landscape Inventory (NPS 2001a) to include additional cultural and natural landscape features which retain integrity and contribute to the site (NPS 2001a), including the wash, entrance road and two stepped concrete entrance curbs along State Highway 190.

As noted in the CLI (NPS 2001a), “although many changes have occurred within the district since the period of significance, most of these are either reversible or are consistent with the site’s ongoing use as an administrative and maintenance facility.”

Buildings and Structures: The following 15 contributing structures within the vicinity of the area of potential effect are listed on the National Register of Historic Places (List of Classified Structures):

- CC-39 (wood frame): Cow Creek Warehouse 1 and Army offices/Recreation hall (1933), used as a dormitory (1942), then converted first to a curatorial storage building, then to a storage area for Roads and Trails
- CC-48 (adobe): Cow Creek Old Administration building (1939) now used as the Resource Management Administration Building
- CC-49 (wood frame): Cow Creek Warehouse 2/Infirmary (1933), used also as an Engineering office, now used for storage
- CC-50 (adobe): Cow Creek Warehouse 3 (1936), now used as storage and office space
- CC-51 (adobe): Cow Creek Warehouse 4/first permanent NPS building (1935) now used as museum storage
- CC-52 (adobe): Cow Creek Oil House (1939) now used for storage
- CC-54 (adobe): Cow Creek Machine Shop and Wash Rack (1940 or 1942), last adobe building constructed by the CCC, now used an auto shop
- CC-55 (adobe): Cow Creek Radio Building (1938), later used as the Electric Shop, now used for paint storage
- CC-57 (adobe and wood frame): Cow Creek Carpenter Shop (1937) now used as Carpenter/Plumbing/Electrical Shop
- CC-62 (Portland porta-perm): Cow Creek Warehouse 5/Equipment Building (1938) now used for resource management and maintenance storage
- CC-64 (adobe): Adobe Workshop/Hydroelectric Building (1939) now used for storage
- CC-91: 22,000 gallon Reservoir
- CC-200: Six-foot-high Perimeter Adobe Wall (1940) surrounding the utility yard
- CC-292: Swimming Pool still in same use

By the time of the CLI, approximately 16 historic structures had been removed and another 15 non-historic buildings had been added. According to the CLI (NPS 2001a), the addition of non-historic buildings over time has been done in such a way that most are compatible with the general pattern of development established during the historic period in both the administration and utility areas. That pattern of development and demolition continues, with the two Quonset Huts located along the Cow Creek Administrative Access Road recently approved for demolition by the California State Historic Preservation Officer (SHPO 2006b). In their place, the park intends to construct two structures similar to the storage buildings now located below the huts.

Siren Site: The former building located at this site, PV-42, was originally constructed in 1937 of wood, with interior plywood walls,

wooden floors and a tarpaper roof. It then contained two rooms, a kitchen and a bath. There are now five rooms, with approximately 820 square feet. A laundry room, with a concrete floor and wood paneled walls was added on the west side and contains an overhang roof. Exterior walls have been sided with board and batten. The original south porch was enclosed and a brick fireplace added. In addition an L-shaped addition included a bedroom and a bath (the old bath became a hallway and closet). Salvaged adobe bricks were used to construct a retaining wall on the north side of the house. Original features in the house include 1940s era cabinetry and fixtures and interior finishes (NPS 1988).

When the building was being considered for the National Register of Historic Places, the draft National Register nomination form described the building as follows:

> "This simple structure, constructed in 1937, was of wood construction with interior walls of plywood, wooden floors, and a tarpaper roof. Originally consisting of two rooms, kitchen, and bath, it presently contains five rooms with 820 square feet. Numerous changes have been made to the original structure. A laundry room with concrete floor and wood paneled walls has been added on the west side of the house on the upper level during 1988. The overhang roof for this area is also new. Board and batten paneling has been added over the original exterior walls.
>
> "The original rectangular building had a stove and a screened porch area with entrance door on the south end. The porch was enclosed and a large brick fireplace added by 1951 in the middle of the south end wall. An L-shaped addition has been added off the northwest end, housing a bedroom on the upper level. At the north end of the structure, the kitchen in the northeast corner has been extended north. The kitchen contains 1940s-era cabinetry. A new bath was added on the north end as well as the master bedroom in the L-shaped addition. The original bathroom is now a hallway and closet area. The interior of the house has its original finish. The lower storage level of the L-shaped addition is sided with corrugated metal and the entranceway faces a high retaining wall made of salvaged adobe bricks."

South Skyline Loop Site: Although there were no historic buildings on this site, the site shows signs of previous ground disturbance, including water pipes and associated valves exposed on the surface. According to park staff, when the duplex at 328 Skyline was constructed, a CCC-era spring box was covered in order to create flat, buildable surface that the foundation rests on. The water pipes and valves at the surface of the present project area, which is below and west of 328 Skyline, are likely associated with the CCC-era spring box. Archaeological surveys conducted in spring 2006 by the park archaeologist located no sites or features in the areas that are being considered in the South Skyline Loop for this project.

North Skyline Loop Site / Salt Pan Vista: No historic structures or development was formerly present at either of these sites.

Park Village (Cow Creek Housing Area)

Park Village is located in the canyon east of the former CCC camps and park operations (administration and maintenance) area. It is generally concealed from most views below and contains 27 single-family houses (not including PV-42), 20 duplex units (in ten structures), and two blocks of six apartments constructed in a variety of styles, including those dating from the CCC period, Mission 66 and other sporadic development.

The original group of houses was considered temporary, although they have lasted more than fifty years. They were made using light construction with wood framing, celotex walls, and tarpaper roofs. Over time, these structures were added on to with some additions occurring in the years immediately following their original construction (addition of bedroom, closet, and entry porch/laundry rooms) (NPS 1988) as well as the addition of fireplaces, flagstone walkways, water features, and electricity.

According to the General Management Plan, although the development of Park Village is directly related to the development of the Cow Creek area, "the removal and/or modification of the original housing and subsequent construction of additional housing since the period of significance has substantively altered the Village such that it no longer retains integrity and therefore is not included in the Cow Creek Historic District" (NPS 2001a). Nor were most remaining structures considered eligible for inclusion on the National Register when they were nominated (NPS July 2006 letter to SHPO). Instead, only the public restroom building was considered eligible for and listed on the National Register. Although other employee houses currently remain (PV-1, PV-3, and PV-42), none of these have retained a high degree of integrity and have therefore not been contained on the List of Classified Structures. In fact, removal of PV 3 (the interior of which was burned in a park structural firefighting exercise) and PV-42 were recently approved for removal by the California State Historic Preservation Officer (SHPO 2006a). The stonework associated with PV-3 will be retained during demolition and used for the construction of a patio enclosure to foster its continued association with a commons area, including a playground that has been developed in front of it. PV-42 is the proposed location for proposed housing under Alternative 2 and 3 (a single family house or duplex). These structures have been approved for removal based on their deteriorated condition, high safety hazards associated with rehabilitation (both contain significant amounts of asbestos-containing materials), and their lack of integrity associated with the development of Park Village. Only two similar houses now remain: PV-10, constructed in 1934, which was extensively remodeled (reconstructed) when asbestos-containing materials were found during its renovation, and PV-1 (constructed in 1933), which has also been remodeled, although to a lesser extent and which at the time of the Cow Creek Housing nomination was considered the best remaining example of the original residences erected for permanent personnel. At the time of its proposed nomination, PV-10 was noted as having undergone minimal alteration and was then considered a good example of the two-room cabins built for married personnel in 1935. To a large degree its original floorplan was retained in reconstruction.

History of Home Construction in Park Village

1933	Three residences constructed to house park staff (PV-1, PV-2 and PV-3)
1934	PV-10 constructed
1937	PV-42 constructed
1955	18 two- and three-bedroom single-family residences constructed in Park Village (Hillside Site) as part of the Mission 66 program (PV120-122, 126-129, 139-140, 205-206, 210-214)
1956	Cow Creek found unsuitable for further administrative expansion. New visitor center and administration building complex constructed at Furnace Creek.
1959	PV-220 a six-unit apartment building constructed
1966	PV-222 a six unit apartment building constructed
1992-1997	PV 323-324, 335-343 constructed
1997-1998	PV 334-342 constructed
1997-1998	PV-343 a four-unit apartment building constructed
1998	Coyote Loop (Bench Site) constructed
2005-2006	PV-42 determined ineligible for National Register. Scheduled to be removed. Source: NPS 2001a.

At the time of the writing of the Park Village National Register Nomination, five houses, one garage, and a comfort station/hydro-electric plant remained from the original array of approximately seventeen structures shown on 1930s plans (eleven were sold at auction in 1959 for $10.05 each). PV-3 was found ineligible for the National Register due to an irreparable state of deterioration and was removed in 1989.

Beatty Site: The Beatty site is managed by the Tonopah Field Office of the Battle Mountain District of the Nevada Bureau of Land Management. Because the land is federally owned, county or state zoning statutes in effect for other parts of Beatty do not apply. The NPS and BLM have discussed the possibility of allowing the NPS to use the land for the construction of NPS housing.

J. Park Operations

Furnace Creek is the primary administrative operations headquarters, however facilities there are inadequate to contain all administrative staff. As a result, maintenance, resource protection, and visitor use staff is located at Cow Creek, three miles north. As noted above, Cow Creek was developed for administrative and maintenance functions by the Civilian Conservation Corps in the 1930s.

Approximately sixty-one percent of park staff lives in park housing. Others commute from Beatty and Pahrump, Nevada and rural areas in the vicinity. Park employees work throughout the park, including at the following Developed Areas: Furnace Creek, Cow Creek, Grapevine, Stovepipe Wells, Scotty's Castle, Wildrose, and outside the park at a visitor information center in Beatty, Nevada.

The park's 90 housing units currently consist of 48 two-bedroom units (of which 10 are trailers), 24 one-bedroom and efficiency units, and 18 three-bedroom units (two are trailers). In addition to this housing, the park also maintains 47 recreational vehicle (RV) trailer sites. Seasonal employees, researchers and volunteers who bring their own RV's

or trailers to the park are the primary occupants of these sites, but they are also utilized by contractors working on projects in the park when available (NPS 2004:24). These trailer sites are located at Cow Creek, Grapevine, and Stovepipe Wells.

Of the park's 132 paid staff members in winter 2004-2005, 81 were housed in the park (32 were required occupants). Of these, nine were dual-career employees, 10 were seasonal, and one was a term employee. The concessions contract currently allows three units at Scotty's Castle and two trailer units at Grapevine to house concessions employees only (NPS 2004). At the time the housing management plan was written, there were 33 vacant positions with an additional five new positions being created.

According to the Housing Management Plan (NPS 2004:83), the park housing program requires the following staff:

1 – Permanent Housing Officer, GS-09
2 - Permanent Subject-to-Furlough Maintenance Mechanics, WG-09
1 – Term Subject-to-Furlough Maintenance Mechanic, WG-09
1 – Term Maintenance Worker, WG-05
1 – 50% of Term Maintenance Worker, WG-05.

VI. Environmental Consequences

A. Impacts to Land Use

Alternative 1

Under the no action alternative, no housing would be constructed. Park employees who would otherwise reside at Grapevine would find housing in other locations, as the remaining trailers are condemned and removed from service. Most of the Scotty's Castle employees would probably live at Cow Creek or outside the park, in Beatty. Over time, the residential land use at Grapevine would transition from permanent trailers to travel trailers and recreational vehicles used by volunteers, contractors, and some seasonal employees. It is anticipated that such changes in land use at Grapevine would result in minor to moderate long-term beneficial effects as the area was rehabilitated and converted from permanent to temporary living space, and minor adverse effects from continuing use as a volunteer and seasonal housing area. Overall, Death Valley National Park land use, including areas allocated for administrative, maintenance, and residential functions would remain largely unchanged, although there would be a minor reduction in the number of bedrooms (26 of 174 bedrooms or 15 percent fewer) or housing units (12 of 90 housing units or 13% fewer) available in permanent structures.

Alternative 2

Although most sites are located in previously developed areas, the project would increase the footprint of development. Under this alternative, dormitories would be constructed at three sites within the Cow Creek Housing Area and two duplexes and a single-family home would be developed outside the park in Beatty, Nevada. The 4-bedroom dormitory to be constructed at the Siren Site (Site 2) would replace the house (PV-42) formerly located there. The four- and eight bedroom dormitories to be located at the North and South Skyline Sites (Sites 3 and 5) would be the first residential structures in these locations. They would, however, be located as infill in the housing area between other existing residential structures, consistent with the primary function of this area. As a result, impacts to land use in the Cow Creek Housing Area would be negligible.

There would be no other changes to land use within the Cow Creek Administrative / Maintenance Area under this alternative. Lands supporting the school, library, natural history association and other maintenance and administrative functions would remain unchanged. Other development aspects, including circulation space and utilities would also remain unchanged, with the existing infrastructure in the Cow Creek Housing Area already present.

The construction of two two-bedroom (each side) duplexes and one two-bedroom house in Beatty would result in a minor to moderate change in land use and proposed use of existing public land (from existing open space / "designated for disposal" to residential / open space). This land, which is contiguous, to the town of Beatty would result in a slight expansion of town services onto currently undeveloped, but not undisturbed land. Although no structures have yet been built on this site, the site has apparently been routinely disturbed by dumping and

other illegal uses and is therefore not pristine. The development of these residences is consistent with existing land use in the town of Beatty. As a result, the change in land use, though moderate in the context of its existing use and other BLM uses, would be minor when compared to other nearby development in Beatty given the site's location immediately adjacent to an existing developed neighborhood and the likely expectation by the BLM that the site would eventually be developed or that it would provide access to nearby BLM managed public lands. In spring 2006, BLM put forth an Environmental Assessment for the proposed sale of approximately 40 acres of land west of this site. The land sale area would be bounded on the east by the dirt road that goes to the water tank. Therefore, long-term impacts would be minor. In the context of other development in the town of Beatty and the expanse of land conserved for other uses by the BLM, the impact of the change in land use with the development of three homes with attendant circulation space, parking areas and attached garages on this property would be negligible.

Alternative 3

This alternative would include the construction of two duplexes and a single-family home on sites 2, 3, and 5 within the Cow Creek housing area.

Unlike Alternative 2, however, two eight-bedroom dormitories would be constructed at Salt Pan Vista within the park, on land considered part of the Cow Creek Administrative / Maintenance Area, although *not* within the Cow Creek Historic District. The Salt Pan Vista site currently includes 24 hookups for travel trailer and recreational vehicle parking. These hookups are used by NPS contractors and for overflow volunteer RV parking. Prior to 1997, Salt Pan Vista was used as an NPS mobile home housing area. In addition, the permanent headquarters for the Death Valley National Park Natural History Association (NHA) was constructed here in 1999, in accordance with the EA for Development in the Cow Creek Administrative Area (NPS 1998). The dormitories would be located east of the NHA building, displacing approximately six trailer hookups.

In the (Cow Creek) Developed Area Plan and Environmental Assessment (NPS 1980), it was determined that Salt Pan Vista would be retained for trailer use for the foreseeable future. It was, however, noted that if additional sites for apartment or dormitory housing should become necessary in the future, and policy changes made it possible to construct new housing, that this area could be converted from trailer to dormitory use (1980:4). In any event, the plan makes clear that Salt Pan Vista was intended to serve as a location for seasonal housing, whether in trailers or in more permanent structures.

Thus, this alternative would maintain the residential use of this area, changing it from transient to permanent structures. The Cow Creek administrative area would then retain a total of 41 transient trailer sites. Resulting impacts to land use would be minor to moderate, with an observable change from transient to permanent housing.

As in Alternative 2, there would be no other changes to land use within the Cow Creek Administrative / Maintenance Area under this alternative. Lands supporting the school, library, Natural History Association and

other maintenance and administrative functions would remain unchanged. Other development aspects, including circulation space and utilities would also remain unchanged, with the existing infrastructure in the Salt Pan Vista area already present.

Cumulative Impacts: Since the area's establishment as a national park, some sites have undergone major development for visitor and administrative uses, however, in keeping with national park service tradition, the extent of these sites, when compared with the vast expanse of the park is minimal. The Cow Creek Developed Area, in particularly, has changed only incrementally over time from its original site plan, when the housing, maintenance and administrative areas were laid out on the landscape. Although today's footprint is larger, it retains moderate separation between these uses and little overlap between them. In the context of overall park administrative development patterns at Cow Creek, and given that the proposed housing project is the last trailer replacement project proposed in the park, impacts from the project would be negligible to minor given current land uses in the park, and negligible given the likely development patterns that the town of Beatty would undergo were it to undergo an economic boom.

Conclusion: Impacts to land use under Alternative 1 would be minor within the park. Impacts under Alternative 2 would be minor to moderate associated with development in Beatty compared to existing BLM public land use and negligible compared to existing land use in Beatty and minor to moderate in the park. Impacts under Alternative 3 would be negligible in the Cow Creek Housing Area and minor to moderate at Salt Pan Vista. There would be no impairment of land use or to the values associated with it from the alternatives in this Environmental Assessment.

B. Impacts to Geology / from Geological Hazards

Alternative 1

There would be no additional impacts to geology associated with Alternative 1. Because there would be a conversion from permanent housing sitting astride a fault rupture hazard zone to temporary (seasonal and volunteer self-contained trailers and recreational vehicles) housing in the same location, there would be a slight negligible beneficial effect by reducing the potential for effects from geological hazards from the removal of twelve trailers housing permanent and seasonal employees, instead of volunteer and seasonal employees from the Grapevine Developed Area. Depending on how long the sites continued to be used, impacts could range from short- to long-term; depending on the likelihood of a fault rupture occurring, impacts would be negligible to major, affecting none of the residents and structures or much of the area. Because occupancy would be intermittent or seasonal the overall risk would be diminished.

Alternative 2

In addition to impacts described under Alternative 1 with respect to the current Grapevine Housing Area, under Alternative 2, with the house and duplexes constructed in Beatty and the dormitories within the Cow

Creek Housing Area, there would be negligible to minor adverse impacts to geology from the construction of building sites. Depending on the building site, standard or deep excavation would be required for foundation placement and other improvements. Without deep excavation in the bentonite clay sites, geological hazards would affect residents, with the homes subject to the expansion and contraction associated with the clay during wetting and drying events. With the deep excavation and construction techniques required for building in these formerly unstable areas, impacts to the consistency of geological features, including their context would be minimized to negligible to minor and would be localized and long-term.

A geotechnical evaluation of the proposed housing sites available within the Cow Creek Housing Area was completed in July 2006 (Western Technologies, Inc. 2006). The services rendered included subsurface borings and engineering analysis, and provision of recommendations to aid in foundation, retaining wall, pavement and floor slab design, and earthwork guidelines. According to the survey, fill material was not encountered in soil borings at the proposed sites. The subsurface soils generally consist of loose to very dense granular soils and stiff to hard clayey materials. Varying amounts of gypsum were found in the native soils. Water was not encountered on the date of drilling to the depths explored (20').

Expansion, compression and chemical corrosivity tests were also made under the geotechnical survey, which also recommended that additional expansion tests be performed during construction. If expansive soils are encountered during grading, selective grading procedures would be implemented: in any case, expansive soils would not be used as fill in structure areas, and also would not be used within three feet of the final subgrade in other areas. Gypsum deposits found in areas for foundations and pavements would be excavated and blended with acceptable native soils at a ratio to be determined during construction. Conventional foundations would be at least 16 inches wide and would be established at least 24 inches below the lowest adjacent final compacted subgrade. Grades around foundations would be established such that drainage will be away from proposed structures.

Although no new access roads would need to be created in the Cow Creek Housing Area, the existing access road to the housing area crosses and travels close to a terrace above the Nevares Creek wash. As noted in the *Impact Topics Considered But Dismissed*, under Floodplains, this area is subject to periodic natural washout which could result in negligible to major impacts to existing geological and topographical features, including the steep bank along Nevares Creek.

Geologic impacts to the proposed construction site in Beatty would be minimal, with standard excavation resulting in negligible, localized, but long-term impacts to area geology on this rather flat site.

Alternative 3

Impacts to geology and geological hazards in Alternative 3 would be the same as those in Alternative 1 with respect to the conversion of housing in the Grapevine area, the same as in Alternative 2 for the proposed construction of the house and duplexes in the Cow Creek

Housing Area and as follows for proposed construction of dormitories at Salt Pan Vista.

With dormitories constructed in this Alternative at Salt Pan Vista, there would be no need for deep excavation associated with foundation placement because no bentonite soils would be disturbed. As a result, impacts to geology would also be localized, and similar to those in Beatty at Salt Pan Vista, with minimal standard excavation for foundation and utility line placement.

Nonetheless, the same concerns about fault traces through the Salt Pan Vista area would remain as described in the Environmental Assessment for Development of the Cow Creek Administrative Area (NPS 1998: 8-9). Therefore, as in that project, five-foot deep trenches would be dug at each of the dormitory building sites. The trenches would extend beyond the proposed footprint of the buildings and would be perpendicular to nearby fault traces. As then, certified earthquake hazard geologists would examine the trench prior to the initiation of construction. If a slip-fault structure were to be found, the building footprint would be moved to avoid the fault. Although no fault traces were found in the trenching for the nearby Death Valley Natural History Association building, retrenching the area to investigate for the likelihood of fault traces under the specific building sites for the dormitories would ensure that the dorms were built astride relatively stable ground, a long-term negligible to major beneficial effect on both the proposed area residents and building longevity by reducing the potential for extreme geological hazards to occur.

Mitigation: As noted above, measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to geology and geological hazards include:

- Converting permanent and seasonal housing in the Grapevine area to seasonal and volunteer housing resulting in less potential for year-round occupancy of this hazardous site.
- Employing construction techniques that would increase the seismic stability of structures, including compliance with all California laws requiring new construction to be able to withstand specified seismic events.
- Using deep excavation for foundation placement where needed in clay soils to increase building stability during infiltration and seismic events.
- Not using expansive soils as fill in structure areas, or within three feet of the final subgrade in other areas.
- Excavating additional trenches in the Salt Pan Vista area to ensure no fault traces are present on the proposed dormitory sites.

Cumulative Impacts: Death Valley National Park lies in a seismically unstable area, with faults and fault traces common throughout the park. Over time, as more information about the area’s geology has been revealed, the park has moved toward additional investigation and avoidance of impacts from fault rupture affecting building construction. In addition, California laws have been developed to reduce seismic hazards associated with the places people live.

Nonetheless, some historic areas in the park were developed, prior to the advent of critical geologic hazard information being developed. Reducing the geological hazards to employees and visitors associated with the park's very active geology has been a goal of the park for some time. The proposed actions in this environmental assessment would go one step further toward meeting that goal by reducing overnight occupancy of the Grapevine area. In other areas, over time, there has been an incremental, albeit negligible effect on geology from construction in the park, which has been limited to development in non-sensitive geologic formations. This development has been limited to small, localized areas and has resulted in a long-term negligible to minor adverse effect on area geological features.

Conclusion: Alternative 1 would result in a localized, long-term, negligible beneficial effects associated with geological hazards as well as the potential for long-term, localized, negligible to major adverse effects. Impacts to geology would remain localized, negligible, and adverse. Alternative 2 would have the same effects as Alternative 1 associated with the Grapevine area, plus negligible to minor, localized adverse impacts to geology from construction in the Cow Creek Housing Area and negligible, localized, but long-term impacts to area geology in Beatty. Alternative 3 would have the same impacts as Alternative 1 related to Grapevine, similar impacts as Alternative 2 related to constructing smaller structures in the Cow Creek Housing Area and long-term negligible to minor, localized effects on geology related to construction at Salt Pan Vista. Impacts associated with geological hazards at Salt Pan Vista would be mitigated by locating the structures where no fault trace activity was found, thus reducing the risk from fault rupture to negligible to minor. There would be no impairment of geological resources associated with any of the alternatives described in this Environmental Assessment.

C. Impacts to Soils

The following specific actions called for by Alternatives in this Environmental Assessment would affect soils:

- Removal of trailers in the Grapevine Housing Area (Alternatives 2-3)
- Grading of construction sites, including building locations and associated driveways, parking and storage areas (Alternatives 2-3)
- Excavation of foundations and utility lines and walkways, such as sidewalks (Alternatives 2-3)
- Construction staging (Alternatives 2-3)
- Landscaping maintenance (Alternatives 2-3)
- Removal of vegetation, including plants to be salvaged (Alternatives 2-3)
- Deep excavation for foundation placement in some locations (Alternatives 2-3)
- Excavation of seismic investigation trenches at Salt Pan Vista (Alternatives 3)
- Removal or burial of historic water system components from the South Skyline site prior to construction (Alternatives 2-3)

- Removal and reuse of historic stonework in the vicinity of the Siren site (Alternatives 2-3)

Alternative 1

Under this Alternative, as under all alternatives, the remaining trailers in the Grapevine Housing Area would continue to be removed as they are condemned by repair costs exceeding their value. Upon condemnation, the trailers would be sold and removed, including stubbing out all utility lines to a post to provide hook-ups for occasional seasonal or volunteer use. Disturbed areas would be scarified and some effort made to minimize the footprint of the site, while converting it from a large permanent habitation site to an incidental use site for a smaller vehicle. These actions would constitute short-term, localized adverse effects, however over time, some vegetation would reestablish naturally in undisturbed areas, likely resulting in a long-term beneficial effect on soil fertility and stability. In addition, park staff would periodically conduct surveys for invasive species and could, in the future, choose to conduct active rehabilitation of the sites, resulting in a minor, long-term beneficial effect on soils.

Impacts of Alternatives 2 - 3

Alternatives 2 and 3 soils impacts would occur in the same and different locations. In Alternative 2, these would occur in Beatty and in the Cow Creek Housing Area In Alternative 3, these would occur in Salt Pan Vista and in the Cow Creek Housing Area. Soils would be affected wherever grading, excavation and/or fill is called for. Grading and excavation in construction sites, including building locations and associated driveways, parking and storage areas, as well as for utility lines and walkways, and for effective drainage (including connection to stormwater drains) would occur in Alternatives 2-3. During these activities, soils would be mixed, moved, and replaced throughout the project areas, causing a minor to moderate, localized but long-term, adverse effect to the area's soil profiles, with the greater degree of impact occurring in the limited areas (such as the Beatty site) not previously disturbed by grading or construction. The areal extent of the affected area has been estimated below in the specific information provided regarding square footage of affected area in each alternative. Effects associated with impervious surfacing would constitute approximately half of each extent (including the buildings, associated parking and circulation) and would result in a minor, localized, long-term adverse effect. Short-term adverse effects would also be localized to the building sites, but would be temporary in nature, lasting only through the rehabilitation / landscaping phase of the projects.

North / South Skyline Loop: To make these locations stable enough for construction in Alternatives 2 and 3, (with firmly compacted fill), the current surface would have to be excavated to a depth of four feet. Fill material would then be placed within the excavation and compacted using a spray truck and water. These deep-excavated bentonite soils would be removed from the site and stored at the park's mixing site.

Siren Site: In Alternatives 2 and 3 there would also be additional impacts from excavation of soils associated with the salvage and removal and then reuse of historic stone walkways / retaining wall and any historic

vegetation impacted by the construction at this site. *(See Historic Structures impacts for more information regarding the disposition of the stone.)*

In addition to physical construction activities, impacts associated with construction staging would also affect soils. Moving, covering, trampling, and compaction of soils by equipment and workers within the construction work zone would occur. Because most project areas have been previously disturbed by development activities (e.g., maintenance and construction) or by incidental use (including the Beatty site); however, the effects of these activities would vary from negligible (within the Cow Creek and Salt Pan Vista sites) to moderate (at the more vegetated Beatty site). Nonetheless, localized soil compaction would temporarily decrease soil permeability, change soil moisture content, and lessen its water storage capacity. Because of planned scarifying during rehabilitation of disturbed areas following construction, these actions would constitute a negligible to minor, short-term, adverse effect on soils.

Vegetation impacts, which would vary among alternatives, are described in that section below. Impacts to soils from the salvage or removal of vegetation, depending on the slope and soil type associated with the site, would vary. Potential temporary impacts from wind erosion would tend to be greatest at the sites with bentonite (clay) soils (North and South Skyline Loop sites within the Cow Creek Housing Area) and least in other sites. All would be temporary and would be mitigated by the use of water or another wetting agent, as well as by best management construction practices. Just as with other excavation, vegetation salvage and removal would result in moving, mixing, and replacement of soils, thereby disrupting existing soil profiles. Within the park, project areas have been disturbed and would not benefit from topsoil salvage, a negligible adverse effect. Future analysis would determine whether topsoil salvage at the Beatty site to aid in revegetation would produce likely benefits. If topsoil were salvaged it would be stored to retain fertility and microorganisms during storage in windrows no higher than three feet, resulting in a negligible to minor long-term benefit.

Following construction at each site, would be some degree of rehabilitation at each site, including initial landscape planting with native species, which may occur over time. Rehabilitation of the sites, including any landscape planting would result in a long-term, negligible to minor, beneficial effect on area soils, increasing fertility and waterholding capacity as well as stability.

Alternatives 2 and 3 would have permanent impermeable surfacing of approximately 38,000 square feet and temporary disturbance of 83,500 square feet or 1.9 acres.

The loss of permeable surface drainage, resulting in potentially greater overland flow during storm events would be compensated for by the connection of the new construction into the existing drainage system.

Alternative 2 Additional Impacts

North / South Skyline Loop: For the four-bedroom dormitory (South Skyline Loop), this would require the excavation of approximately 14,000 cubic feet of local material (3,500 square feet to a depth of four feet) and the importation of approximately 14,000 cubic feet of fill. All fill material used would come from an in-park source, either excess fill generated during the construction of a boardwalk at Badwater, or from alluvial fill from a park pit located at Cow Creek. Acquiring 14,000 cubic feet of material would require approximately 65 truck loads (eight cubic yards per truck) of fill. The four-bedroom dormitories would require temporary disturbance of approximately 13,000 feet and permanent disturbance of approximately 3,800 square feet.

For the eight-bedroom dorm (North Skyline Loop) this would require the excavation of approximately 22,000 cubic feet of material (5,500 square feet to a depth of about four feet) and the importation of a corresponding volume of fill. As for the South Skyline site above, all fill material used would come from an in-park source, either excess fill generated during the construction of a boardwalk at Badwater, or from alluvial fill in a man-made pit at Cow Creek. Acquiring 22,000 cubic feet of material would require approximately 102 truck loads (eight cubic yards per truck) of fill. Additional excavation would be required to remove and salvage or to appropriately bury the portions of the original Cow Creek water system now exposed at this site. The eight-bedroom dormitory would require temporary disturbance of approximately 27,000 feet and permanent disturbance of approximately 10,800 square feet.

Siren Site: The construction of a four-bedroom dormitory at the Siren site would require the same areal excavation as noted above for the same dormitory constructed at the South Skyline Loop site. Depth excavation would not be as great, however, since the site is underlain by more stable soils and has had a previous structure placed on it (PV-42).

Beatty Site: The house would require a foundation excavation of approximately 2,800 square feet to an unknown depth with temporary disturbance of approximately 9,500 square feet. The duplexes would require a similar excavation of 6,900 square feet and temporary disturbance of 15,000 square feet.

Alternative 3 Additional Impacts

While, areal impacts associated with the construction of the dormitories would be the same as in Alternative 2, the excavation impacts would not be as great for the two, rather than three dormitories and there would be little need for such extensive importation of fill because the proposed building site is comprised of more stable soils. Other impacts associated with construction of the dormitories and house / duplexes would be the same as noted above.

Since a different combination of structures would be constructed in the Cow Creek Housing Area, impacts from their construction would vary slightly, with a reduction in both the amount of disturbance from construction and in the importation of compactable fill.

North / South Skyline Loop: The single-family house (South Skyline Loop) would require the excavation of approximately 14,000 cubic feet of local material (3,500 square feet to a depth of four feet) and the resulting importation of approximately 14,000 cubic feet of fill. Fill material sources would be the same as in Alternative 2. Acquiring 14,000 cubic feet of material would require approximately 65 truck loads (eight cubic yards per truck) of fill.

For the duplex (North Skyline Loop) this would require the excavation of approximately 18,000 cubic feet of material (4,500 square feet to a depth of four feet) and the importation of a corresponding volume of fill. Acquiring 18,000 cubic feet of material would require approximately 85 truck loads (eight cubic yards per truck) of fill.

Siren Site: Although the duplex at the Siren site would require a standard foundation excavation (approximately 4,500 square feet to an unknown depth, depending on geotechnical surveys and 6,900 square feet overall, excavated fill would likely be appropriate for compaction and this site would not require a significant amount of imported fill.

Mitigation: Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to soils include:

- Locating staging areas in a place that will minimize new disturbance of area soils and vegetation;
- Minimizing ground disturbance to the extent possible;
- Using mats or plywood to minimize soil compaction impacts in sensitive areas;
- Salvage of topsoil, as appropriate, from excavated areas for use in re-covering source area or other project areas;
- Storage of conserved topsoil in a separate location (segregated from subsoils);
- Windrowing stored topsoil at a height that will preserve soil microorganisms;
- Reusing (rather than removing from the project area) excavated materials for use in constructing berms or to level areas of impact;
- Revegetation through native seeding or planting of appropriate areas; and
- Importation of park sourced, weed-free specified clean fill and topsoil (if needed).

Cumulative Impacts: Over time, a variety of impacts to soils have occurred in Death Valley National Park and in Beatty, Nevada. These impacts have primarily been a result of construction and mining activities and have resulted in soils that have been extensively moved, mixed, replaced, and compacted depending on the activity. Additionally soil loss has occurred through natural processes and through development, including purposeful removal in mining and construction and where vegetation has been removed or lost. When compared to the extremely large arid desert environment that comprises Death Valley National Park and the nearby Beatty area, these impacts have been negligible to minor. Proposed impacts as a result of project activities or of other proposed activities in the park and vicinity

would not contribute more than localized, negligible, cumulative incremental impacts.

Conclusion: Alternative 1 would result in negligible adverse and negligible-to-minor, localized beneficial effects on soils and soil properties. Alternatives 2 and 3 would include impacts from Alternative 1 and would have additional localized, minor-to-moderate impacts on soils and soil properties. In addition, all alternatives would result in some negligible-to-minor, localized, beneficial effects, depending on to what degree site rehabilitation and native landscaping occurred following construction. There would be no impairment of park soils or soil resources as a result of the implementation of any of the Alternatives described in this Environmental Assessment.

D. Impacts to Water Resources

1. Impacts to Water Quantity

Alternative 1

There would be no additional use of water under Alternative 1. Alternative 1 would result, instead, in a reduction in the use of water by residents and for landscaping maintenance because there would be fewer people present year round at Grapevine due to the removal of the remaining trailers, a negligible beneficial effect. While volunteers and seasonals would occasionally reside in the area, their use of water would be far less than that required for the former, up to about 52 residents.

Alternatives 2-3

Water use at the Cow Creek Developed Area would increase in Alternative 2, where an additional 16 people would live seasonally or year round in three dormitories constructed in the Cow Creek Housing Area, replacing those who formerly lived in the Grapevine area. Use of water by residents in the house and duplexes in Beatty would likely result in an additional consumptive use of water from the Beatty water system of approximately 400 gallons per day. Additional water use is estimated to be the same for the other alternative (3) but would vary by location, depending on where the housing was constructed. In Alternative 3, all additional use would occur in the park and is estimated to include the 400 gallons associated with the house and duplexes and dormitories. This use would be in place of the same withdrawal occurring in the Grapevine area.

The spring-fed Cow Creek Developed Area water system currently produces approximately 216,000 gallons per day of treated water and has a water storage capacity of 350,000 gallons and an overall capacity of approximately 350,000 gallons per day of treated water, without additional improvements. As a result, all proposed use of water from the Cow Creek water system falls within the ability of the existing water system components to accommodate. Use of an additional amount of water, compared to existing production of water would result in a long-

term minor (Alternatives 2) to moderate (Alternative 3) adverse effect on the existing water supply.

Mitigation: Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to water quantity include:

- Using low-flow toilets and shower water heads;
- Replacing non-native, non-historic landscaping with native plant landscaping;
- Revegetating disturbed areas with native, drought-tolerant species;
- Orienting the buildings on their long-axis to minimize sunlight exposure;
- Using energy star appliances, including air conditioners, dishwashers and laundry facilities where provided; and
- Continuing to allow the non-native athel tamarisk tree (*Tamarix aphylla*) to flourish in the Cow Creek Housing Area to provide additional shade for buildings and structures located there, while eventually replacing it with other types of shade trees (NPS 2002:34).

2. Impacts to Water Quality

Alternative 1

There would be no additional impacts to water quality as a result of the implementation of Alternative 1 in either the Grapevine or Cow Creek areas. A reduction in the amount of year-round water usage due to the reduction in the number of permanent residents could result, however, in a negligible-to-minor, long-term beneficial effect on water quality, but increasing the natural quantity of water available for use by plants and animals rather than park development.

There would continue to be a potential for water quality impacts to occur as a result of the location of Park Village (Cow Creek Housing Area). As noted in one geological study:

> FC-1: The drainage area containing Park Village will likely affect the access road, causing periodic washout to occur, but would not affect the housing area. Although several buildings are located very close to a steep bank along Nevares Creek, they could be threatened by bank erosion from extremely high flows, but not directly by flooding. The housing access road itself is adjacent to the creek, however, and could also be threatened by overwash during high flows (NPS nd).
>
> FC-2A: Based on the Flood Mitigation Study, this drainage would contain all calculated flood flows. Although wash sides could slump into the wash from bank erosion during a flood, development in the area would not otherwise be affected by flood flows.

Such a high flow event as noted could result in a significant amount of sediment being transferred to the creek, albeit outside of the Cow Creek Housing Area and not as a result of the implementation of Alternative 1. Such an impact, if it occurred would be outside the

proposed project area under other Alternatives, but could affect access to the project area.

Alternatives 2-3

Under all alternatives, there would be a potential for sedimentation impacts to water quality, particularly in the vicinity of the South Skyline Loop site, where runoff from the water treatment plant has created a thriving artificial riparian area with fan palms and other water loving plants along the west boundary. As a result, under Alternatives 2 and 3 which would utilize this area for construction of a dormitory (Alternative 2) or a duplex (Alternative 3) and which would require deep excavation due to the underlying bentonite soils, effective silt fencing would be placed well away from the boundary of the flow area and would be maintained during construction and only removed following rehabilitation / site stabilization.

Potential impacts on water quality related to the use of fertilizers and pesticides by the proposed residents of the new housing would be negligible. All residents, upon moving or relocation to park housing are advised of the park's Integrated Pest Management Program by the park's Housing Coordinator. The use of an IPM program decreases the reliance by residents and the park on pesticides to treat problems that might otherwise use pesticides as a first, rather than a last resort.

Mitigation: Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to water quality include:

- Using temporary sediment control devices to minimize transport of sediment to open water.
- Covering stockpiled soil and rock with semi-permeable matting or plastic or another type of erosion control material as appropriate during the project to minimize transport of sediment during wind or water erosion.
- Minimizing soil disturbance and re-seeding or revegetating disturbed areas as soon as practical.
- Retaining silt fencing in disturbed areas until stabilization by reseeding or revegetation.
- Using swales, trenches, or drains to divert storm water runoff away from disturbed areas.
- Locating staging areas away from drainage areas.

3. Impacts to Wetlands / Floodplains

Alternatives 1-3

There would be no impacts to wetlands or floodplains under any Alternative described in this Environmental Assessment.

Cumulative Impacts: Although the use of groundwater and surface water is a critical issue in the arid desert environment of Death Valley National Park and Beatty, Nevada, compared to withdrawal of groundwater outside the park for the Las Vegas urban area, use within the park for administrative purposes over time has continued to be minimal. Cattle ranching, mining, and resort and park development have contributed to changes in the natural concentration of water in the park. Flows have

been diverted, dammed, and dramatically reduced. Such water use has resulted in documented changes to or the loss of riparian plants and animals associated with the water sources. Among the largest uses of water within the park boundary is the Furnace Creek development owned by the park's concessioner Xanterra Resorts, Inc, which includes a golf course, two swimming pools, and a variety of lodging, along with food and gift services. This and adjacent water uses are currently the subject of the Furnace Creek Water Environmental Impact Statement (NPS 2005). By contrast, the use of additional water in either the Beatty and Cow Creek areas or the Cow Creek area would be considered a negligible, localized impact.

Conclusion:

Water Quantity: Alternative 1 would result in negligible, beneficial effects on water quantity by reducing the amount of potable water needed at Grapevine. Alternatives 2- 3 would have the same negligible beneficial effects as Alternative 1. While Alternatives 2-3 would not be expected to result in additional use of water, beyond replacing the use of water that formerly occurred at Grapevine either in Beatty and Cow Creek or simply in Cow Creek, coupled with the decision to allow former trailer sites at Grapevine to be used for seasonal and volunteer trailers, there would be an additional incremental use of water, depending on the nature of the residents and how long they occupied the site.

Water Quality: Alternative 1 would result in a negligible to minor, long-term beneficial effect on water quality due to the reduction in the number of year-round residents, and thus water usage, at Grapevine. Alternatives 2-3 would have the same negligible to minor, long-term, beneficial effects as Alternative 1. Alternatives 2-3 would also have negligible localized adverse impacts on water quality due to the potential for sedimentation into the wetland created by runoff from the water treatment plant. Under Alternatives 2-3, the impacts to water quality due to the potential use of fertilizers is considered negligible.

There would be no impairment of water quantity, water quality, wetlands or floodplains or other water resources related values from the Alternatives described in this Environmental Assessment.

E. Impacts to Vegetation

Alternative 1

Removing the trailers from the Grapevine Housing Area would result in negligible-to-minor impacts on vegetation. Landscaping and incidental vegetation that has grown up in the vicinity of the trailers since they were located in the Housing Area would be affected, particularly where it occurs on the tow end of the trailers or where it occurs in the vicinity of utilities to be disconnected. Numerous large and small trees (athel tamarisk, cottonwoods, palms, creosote, and mesquite) and small shrubs (saltbush and oleander) occur at the site. Direct rehabilitation of the site, including revegetation over time, whether direct or indirect, would result in negligible beneficial effects.

Alternatives 2-3

Impacts to Vegetation Associated with Development at the Beatty, Nevada Site
Alternative 2 would involve construction of two duplexes and a single-family house on undeveloped land immediately adjoining the town of Beatty, Nevada. Approximately 39,500 square feet of rocky Mojave / Great Basin desert scrub vegetation interspersed on this rocky site would be temporarily affected by the construction of these buildings under either alternative and approximately 16,600 square feet would be permanently affected.

A variety of small shrubs and forbs occur on this fairly flat, rocky site. Plants at the site contain representative species of both the Mojave and Great Basin desert scrub vegetation classifications, including creosote, buckwheat, shadscale, *Ephedra sp.* and Halogeton would be affected by the construction of the house and duplexes. A wash containing creosote and tamarisk borders the parcel on the east, but would not be affected by the proposed project.

Impacts to Vegetation Associated with Development within the Cow Creek Housing Area
Depending on the Alternative, construction sites within the Cow Creek Housing Area would vary in how they are used as described below.

North Skyline Loop Sites: This site would be developed as an eight -bedroom dormitory under Alternative 2 and as a duplex under Alternative 3. In Alternative 2, approximately 10,800 square feet would be disturbed and in Alternative 3, approximately 6,900 square feet would be used.

The North Skyline site, which is sparsely vegetated and which consists primarily of unvegetated bentonite soils contains two mature mesquite trees and numerous desert holly shrubs with minimal development of other vegetation. It is likely that the minimal development of vegetation is due to a combination of factors, including the soil type and the previously disturbed nature of the site because of its presence between other houses in the Cow Creek Housing Area. Depending on final siting and design of the duplex, the two mature mesquite trees present at this location could be directly or indirectly impacted by construction. Existing shrubs, such as the desert holly would be salvaged and retained for replanting in the site following construction. While a preference would be given toward replanting the mesquite trees at this site as well, if affected by construction, they could be replanted elsewhere within the housing area. Final transplant locations would be based on the presence of the optimal environmental conditions for mesquite and the potential for these mature trees to provide shade to previously existing structures.

South Skyline Loop Site: This site would be developed as a 4-bedroom dormitory under Alternative 2 and as a duplex under Alternative 3. In Alternative 2, approximately 3,800 square feet would be disturbed and in Alternative 3, approximately 6,900 square feet would be used.

The South Skyline site also contains little vegetation development. Vegetation at this site is mesquite and desert holly. Plants at this location would be treated the same as those at the north site, salvaged and retained for planting back at the site or elsewhere within the Cow Creek Housing Area. Vegetation along the west side of the site, within and adjacent to the water treatment plant runoff creek would not be

affected by the proposed project. Instead, temporary fencing would be installed well outside the wetted perimeter and retained throughout construction. If grading of the site would disturb soils toward the wet area, silt fencing would also be installed and retained throughout restoration to prevent potential siltation impacts to the creek. No vegetation along the creek would be removed under the proposed construction at the site.

Siren Site: This site would be developed as a 4-bedroom dormitory under Alternative 2 or a two-bedroom house under Alternative 3. In Alternative 2, approximately 3,800 square feet would be used and in Alternative 3, approximately 2,800 square feet would be used (with temporary disturbance of 13,000 and 9,500 square feet respectively).

Near the siren on the edge of a steep bank are several moderately sized athel tamarisk trees that would not be disturbed by the construction and would be marked as outside of the construction limits. Elsewhere, especially between the house and the street, the site contains a variety of landscaping, including some vegetation dating from the time of the original construction of the house (PV-42). Construction would directly impact existing vegetation on the site. Several ornamental California fan palms, at least one large athel tamarisk tree, and several mesquite shrubs would be directly displaced by the construction. Although PV-42 was found ineligible for listing on the National Register of Historic Places, to the extent possible, the historic and other vegetation that could be affected by construction would nonetheless be salvaged and retained for replanting at the site in the same or similar locations following construction. Among the plants at the site that would be salvaged and replanted are oleander, fan palms, athel, mesquite, and palo verde.

Impacts to Vegetation Associated with Development at Salt Pan Vista

Alternative 3 would include the construction of two eight-bedroom dormitories at Salt Pan Vista within the Cow Creek Developed Area. Because this site is largely unvegetated due to previous grading and disturbance from ongoing use for temporary construction, volunteer and seasonal trailer sites and has been disturbed by past uses, only a few scattered shrubs would be adversely impacted by the dormitories and associated facilities. Nonetheless, if salvage of these small shrubs (mostly desert holly) is possible, it would occur and they would be replanted in the vicinity, along with other landscaping plants following the cessation of construction and site rehabilitation.

Mitigation

To mitigate for impacts to vegetation, new housing units will be sited to avoid existing vegetation, as much as practicable, and to minimize earthwork. Construction will be monitored to prevent accidental loss of vegetation and unnecessary ground disturbance by construction machinery. As additional mitigation for the loss of vegetation, all new construction would include landscaping with native plants from genetically and ecologically related park populations, consistent with National Park Service policy. The intent of such landscaping would be to rehabilitate or partially restore site vegetation where possible. Non-native plants could be used in landscaping with documentation of cultural resource significance.

Although construction of new housing could result in the unintentional introduction of non-native plants to the park environment, the following actions would minimize this potential. Prior to beginning work within the park, all contractor's materials and equipment, including earth moving and hauling equipment, would be thoroughly inspected and cleaned to prevent importation or dispersal of nonnative seeds or other plant materials. Steps would also be taken to ensure that all materials used in revegetation, including any topsoil and plant materials, are free of nonnative plant seeds or materials. If necessary, monitoring and appropriate site treatments (physical, biological, or chemical) would be employed to prevent the establishment and spread of invasive plants.

Measures to minimize construction impacts to vegetation would include:

- Clearly identifying vegetation to be preserved within the project area by marking, fencing, or other approved techniques.
- Using temporary barriers (e.g., orange construction fence) to protect existing trees, plants and critical root zones designated to remain but which are 1) within the construction limits, 2) on or just outside the construction limits, 3) within the clearing limits (i.e., the zone extending 5 feet beyond the staked construction limits), or 4) on or just outside the clearing limit line.
- Removing vegetation in a manner that would not affect vegetation not proposed for removal.
- Preventing the introduction of exotic species in the project area and staging areas by requiring all earth moving equipment and hand tools to enter the park free of dirt, dust, mud, seeds, or other potential contaminants.
- Thoroughly cleaning any equipment exhibiting dirt or other material attached to frame, tires, beds, wheels, or other parts using pressure washing and/or steam cleaning before entering the park. Equipment would be re-cleaned prior to bringing it back into the park if it has been removed from the project or staging area(s).
- Requiring contractor materials sources to be submitted to the park for approval.
- Protecting staging areas from spillover impacts by the placement of silt fencing or other barriers as appropriate and returning staging areas to pre-construction conditions upon completion of the project.
- Using only native species, appropriate to the site, in revegetation (seeding or planting).
- Salvaging topsoil as appropriate.
- Salvaging vegetation from construction areas or propagating seed from the sites for revegetation.

Cumulative Impacts: Since the park's establishment a few areas, such as Furnace Creek and Cow Creek have undergone fairly extensive development for administrative and recreational development. Most of the park, however, remains in a fairly natural or recovering state (including some former mining areas). As a result, despite the extensive development a Cow Creek compared to undeveloped areas, it constitutes only a very small portion of the wide expanse of the park. Outside of a few developed areas, the park remains wholly natural, and

the impacts of the proposed actions described in this Environmental Assessment as well as other proposed actions now pending by the park or other agencies would have (in comparison to much of the park and in comparison to previous development at Cow Creek) negligible to minor impacts.

Conclusion: Alternative 1 would result in negligible-to-minor, localized adverse and negligible beneficial effects. Alternative 2 would have minor-to-moderate, localized adverse effects on vegetation at the Beatty, Nevada site and negligible-to-minor, adverse effects on vegetation in the Cow Creek area. Over time, as landscaping occurred or vegetation reestablished at the Beatty site, there would be long-term, minor beneficial impacts. At the Cow Creek Housing area sites, however, the presence of bentonite soils at the site would continue to limit the degree and type of vegetation that would establish there, resulting in the short-term impacts associated with construction-related vegetation removal becoming long-term impacts. Alternative 3 would result in the same impacts as Alternative 2 at Cow Creek and negligible-to-minor, adverse and negligible, beneficial impacts at Salt Pan Vista. Vegetation at all of the sites occurs elsewhere in the park in greater abundance and native and historic species would be salvaged and replanted as possible. As a result, there would be no impairment of vegetation resources or their values under any alternative.

F. Impacts to Wildlife

Alternative 1

Removing the trailers from the Grapevine Housing Area would result in negligible impacts on wildlife. The small degree of ground disturbance that would occur from the stubbing out of utilities to a trailer hook-up post would not affect most wildlife. Ongoing impacts to wildlife, as a result of noise and disturbance would be reduced as a result of the reduced occupancy of the site.

Alternatives 2-3

General Wildlife Impacts

There would be a variety of minor-to-moderate wildlife impacts. Some disturbance of nearby large- and medium-sized mammals using the adjacent habitat is expected as a result of the noise and activity associated with construction activities. Bighorn sheep are occasionally seen around or passing through the housing area. Persistent, but temporary, disturbance of birds in the vicinity would also occur as a result of construction activities. During grading, some mortality of small mammals and soil-dwelling invertebrates would occur. Due to the likely frame for construction, this disturbance would occur over time, with impacts associated with the construction of the dormitories first, and then later, the house and duplexes. There would be additional intermittent disturbance of wildlife habitat as human activity and presence in the area increases. Although relatively minimal in the upper project area, trees would be removed to accommodate proposed facilities in Alternatives 2-3. Removal of trees and shrubs would cause some wildlife disturbance, since these trees would no longer be available for bird roosting or nesting, or other wildlife use. The replacement of these trees and shrubs with suitable

native landscaping would, over time, mitigate some of these minor impacts.

There would be additional intermittent disturbance of wildlife habitat as walkways, parking areas, and utility lines are trenched and connected and as utilities are periodically serviced. Replacement of trees and shrubs with suitable native landscaping would, over time, mitigate some of these minor adverse impacts.

Much of the proposed area to be disturbed under Alternatives 2-3 has not been suitable wildlife habitat for decades as a result of human presence and disturbance, and under the proposed project would not again be suitable undisturbed wildlife habitat. Wildlife that are tolerant of human presence, however, would continue to inhabit and/or use the area. With increasing human presence, use would likely diminish over time, while some species would likely become habituated and potentially increase in abundance with the proposed disturbance.

Impacts Specific to Construction Sites

Beatty Site: Under Alternative 2, construction of two duplexes and a house would take place at this site. As a result, this previously disturbed, but fairly intact, site would be converted from open space to a residential area, with the concomitant impacts of increased human presence and decreased wildlife habitat / presence. Both would be localized, long-term, moderate adverse impacts.

North / South Skyline Loop and Siren Sites: Construction of dormitories under Alternative 2 and the house and duplexes under Alternative 3 would take place in areas of existing development as infill in the Cow Creek housing area. All of the proposed building sites have previously been significantly modified from natural conditions, supporting incidental human use for many years. Surface water present adjacent to the South Skyline site is flowing runoff from the water treatment plant and would not be affected by proposed construction due to silt fencing placed between it and the proposed construction site, thus preventing construction site runoff and eliminating potential siltation of aquatic habitat. There would be both temporary, minor to moderate, short-term and long-term minor impacts to wildlife at this location.

Salt Pan Vista Site: Although physically modified by grading and seasonal human use of some of the trailer hook-ups, during much of the year portions this site are relatively undisturbed, with little human presence other than associated with the one permanent structure here, the Natural History Association headquarters. Regardless, it is surrounded by existing uses and has been encroached upon by adjoining human use and is subject to repeated noise and disturbance from the highway below it and from the CalTrans maintenance yard and NPS maintenance and administrative areas above it. There would be both temporary, minor to moderate, short-term and long-term minor impacts to wildlife at this location.

Alternative 3

North / South Skyline Loop and Siren Sites: This alternative would include the construction of two duplexes and a single-family home on sites 2, 3,

and 5 within the Cow Creek housing area. Impacts to wildlife resulting from this development would be the same as impacts for the construction of the larger buildings in Alternative 2 on these same sites.

Salt Pan Vista Site: Construction of two eight-bedroom dormitories at the Salt Pan Vista site would have few impacts on wildlife. This is due to the fact that the site is largely devoid of vegetation and has been heavily disturbed by past and ongoing site activities. Indirect impacts to wildlife that may be present in the adjacent wash north of the site are possible from increased human activity and noise, especially during construction. There would be both temporary, minor to moderate, short-term and long-term minor impacts to wildlife at this location.

Mitigation

Measures to minimize construction impacts to wildlife would include:

- New housing units would be sited to avoid existing vegetation, as much as practicable, and to minimize earthwork.
- Construction would be monitored to prevent accidental loss of vegetation and unnecessary ground disturbance by construction machinery.
- All new construction would include landscaping with native plants from genetically and ecologically related park populations, consistent with National Park Service policy. The intent of such landscaping would be to rehabilitate or partially restore site vegetation and associated wildlife habitat where possible.
- Noise and activity would be minimized during the early morning and late evening hours to limit disturbance effects on wildlife.
- All vegetation to be salvaged or removed would be clearly marked to avoid impacts to vegetation / habitat to remain.
- Silt fencing would be installed outside of the wetted perimeter of the flowing runoff from the Cow Creek water treatment plant (between it and the construction site).

Cumulative Impacts: While there would be no new impacts as a result of Alternative 1 and few as a result of Alternatives 2-3. Alternatives 2-3 propose new construction and would contribute a small degree of (negligible to minor) localized short- and long-term adverse impacts (primarily noise and disturbance and the removal of some small areas of previously disturbed wildlife habitat).

Conclusion: Despite the obvious changes in the Cow Creek Developed Area and the development of other modern facilities, as well as the evolution of mining throughout the park, the park continues to appear primarily as a natural landscape. As a result, there have been few impacts to native wildlife. Visitor use, however, has resulted in increased noise and activity concentrated in a few areas of the park and occasional habituation of wildlife to handouts or disturbance. Over most of the park, however, these impacts are not noticeable (negligible to minor) and opportunities to see wildlife remain similar to when the park was established (most evident at night and during the cooler hours of the day). Alternative 1 would result in negligible, short-term impacts to wildlife. Alternatives 2-3 would result in both temporary, minor-to-moderate short-term and long-term minor impacts to wildlife at all construction locations. There would be no impairment

of wildlife or wildlife values as a result of the implementation of the Alternatives described in this Environmental Assessment.

G. Impacts to Special Status Species

1. Impacts to Special Status Plants

Alternatives 1-3

There would be no impacts to rare communities, rare plants or habitats as a result of the implementation of any of the Alternatives described in this Environmental Assessment.

Cumulative Impacts: Because there would be no impacts to special status plants as a result of any of the proposals in this Environmental Assessment, there would be no cumulative impacts.

Conclusion: There would be no impacts, no cumulative impacts and no impairment of special status plants, plant communities or habitats or their values as a result of the implementation of Alternatives in this Environmental Assessment.

2. Impacts to Special Status Wildlife

Alternative 1

There would be no effect on special status wildlife as a result of the removal of the trailers from the Grapevine Housing Area or from their replacement with temporary trailer hook-ups. No special status species or communities have been found at this site. There would be no known effect to migratory birds.

Alternatives 2 and 3

Beatty, Nevada Site: The biological opinion (BO) for the Tonopah Field Station covers a planning area of approximately 70,600 acres of desert tortoise habitat on public land in the Beatty Nevada area of Nye County. The western boundary is Death Valley National Park, the east the Nevada Test and Training Range. Other boundaries were administratively determined USFWS 2003:6). The BO allows for the disposal of up to 10,800 acres of desert tortoise habitat and impacts to 3,200 acres of desert tortoise habitat over 10 years (2013). Included in the types of actions covered by the BO are rights-of-way (up to 240 acres); recreation and public purpose leases and permits; land exchanges, disposals and acquisitions; and a variety of other projects not applicable to the subject of this Environmental Assessment (USFWS 2003: 8-9).

Construction of two duplexes and a single-family house in Beatty could affect the desert tortoise (*Gopherus agasizzii*), a federally listed threatened species. Surveys for the desert tortoise were conducted by biological science technicians from Joshua Tree National Park (JOTR), as part of the development of this document. The 100% coverage surveys on two different days in mid-April and early-May encompassed the area between the unpaved road on the west and the water district land on the

east, 100 meters north of the paved road bordering the site on the south. The site was surveyed for tortoises, sign, and burrows. Surveyors walked transect lines 5 meters apart across the site, at a pace of approximately 1.6 km/hr. Neither surveyor located any tortoises, tortoise sign, or burrows. Later in mid-May, however, a Death Valley National Park resource staff member observed a desert tortoise less than 400 meters northwest of the parcel. The tortoise was observed on the east side of the dirt road that borders the parcel on the west. A desert tortoise burrow was located in the same vicinity, but on the west side of the dirt road.

The four-acre parcel contains suitable habitat for the desert tortoise. According to the survey report (NPS 2006), the plant community is represented by members of both Mojave and Great Basin desert scrub vegetation classifications. The substrate on the parcel is largely comprised of cobbles and rock, with sand in the wash bordering the parcel on the east. Based on survey of the vegetation and substrate, the parcel contains desert tortoise habitat of marginal quality. Tortoises could be found in this area at relatively low densities. This is due mostly in part to the rocky substrate and lack of abundant forage.

Because surveys to USFWS protocol finding no detectable presence of tortoises at the Beatty site and in the vicinity; because tortoises are not known to be actively using the area (nesting/burrowing) and instead appear to be just passing through; because of the presence of marginally suitable habitat already impacted by inconsistent human activities (ORV use and dumping); and because the above measures would be used to avoid impacts to desert tortoises, the action alternatives (2) proposed in this Environmental Assessment would be not likely to adversely affect desert tortoises. Concurrence with this determination of effect would be sought from BLM and from the U.S. Fish and Wildlife Service pursuant to the programmatic BO with the Tonopah Field Office ((File # 1-5-01-F-570), covering all land use plan activities within the Tonopah Planning Area.

To request project level consultation, the NPS has prepared this document to assist the BLM in providing project specific documentation that 1) describes each proposed action and the specific areas to be affected; 2) identifies the species and critical habitat that may be affected; 3) describes the manner in which the proposed action may affect listed species; 4) describes the anticipated effects; 5) specifies, if appropriate, that the anticipated effects from the proposed project are consistent with those anticipated in the programmatic biological opinion; and 6) describes any additional effects, if any, not considered in the programmatic consultation (USFWS 2003:4).

Impact Mitigation Measures for Desert Tortoise

- If the Beatty site were selected for implementation, ongoing monitoring of sensitive species would continue to occur, including monitoring of activities that could affect desert tortoises.

- Other impacts from implementation of the selected alternative would be avoided or minimized by avoiding areas of habitat and actions that could affect species.

- Because the Desert Tortoise does occur in the vicinity of the Beatty site, but because specific actions would be taken to avoid impacts to them, proposed actions may affect, but would be not likely to adversely affect the Desert Tortoise.

- Residents would be requested to stay at least 325 feet (100 meters) from tortoises when they are observed in the area, while maintenance/rehabilitation activities would be focused during tortoise estivation in summer (June – August) and during tortoise hibernation in winter (November – February). When maintenance or rehabilitation activities occur, onsite surveying prior to and during these activities would occur to ensure that they would have minimal or no effects on desert tortoises. These 100% coverage surveys for sign and presence will be performed within 50 meters of any proposed maintenance or rehabilitation activities. If tortoises or sign of tortoises are found and the work cannot be modified or implementation period changed to avoid tortoises and their habitat, the United States Fish and Wildlife Service would be requested to provide technical assistance and/or initiate consultation prior to implementation of the proposed actions.

- In addition to these measures, actions associated with Alternative 2, if implemented in Beatty would comply with the "Proposed Conservation Measures for All Surface Disturbing Activities" as noted in USFWS 2003:25-28.

Migratory Birds: Because only a small percentage of the Beatty land would be affected and because only small forbs and shrubs exist in the park areas to be affected, there would be minimal effects on migratory birds. In addition, to avoid unintended effects on migratory species, work affecting vegetation would not occur between March and July or would occur only following surveys for migratory nesting species. Clearing and grubbing shrubs during this time could affect species such as the sage thrasher, sage sparrow, Brewer's sparrow, horned lark and meadowlark.

North / South Skyline Loop and Siren Sites / Salt Pan Vista:
No desert tortoises have been observed at these sites over long-term use. Suitable habitat for desert tortoises is not available. Because tortoises are not known to be using the area; because the sites have already been impacted by routine human activities (housing, recreation and park administration); and because mitigation measures identified below would be used to avoid impacts to desert tortoises, Alternative 3 would have no effect on desert tortoises.

In the moderately forested area (shade trees present as a result of the Cow Creek Housing development and fed by runoff from the water treatment plant) that extend down the hill from the North and South Skyline Loop sites, a pair of long-eared owls (*Asio otis*) has nested repeatedly. Long-eared owls, such as the pair that have nested in the housing area, require a habitat of riparian or other thickets with

small, densely canopied trees for roosting and nesting. This type of vegetation would not be directly affected by any of the construction proposed for the housing area. Indirect impacts to birds and other wildlife are also possible as a result of noise and disturbance from increased construction activity and traffic, which would tend to displace wildlife that use the area. Should proposed construction at this site be implemented, mitigation would include scheduling of construction to avoid activity during the breeding season. Long-eared owls are a state species of special concern and would be affected by noise and disturbance during the nesting season (mid-March until the end of May). At other times of year, noise and activities would not impact the species. Actions proposed under this Environmental Assessment would be not likely to adversely affect long-eared owls.

There would be no other impacts to other rare, threatened or endangered wildlife, communities or habitats from the actions proposed in this Environmental Assessment.

Mitigation

Measures to minimize construction impacts to special status wildlife would include:

- Construction in the Cow Creek Housing Area would not occur during the long-eared owl nesting season.
- All construction at the Beatty site would be monitored to ensure that no desert tortoises would be adversely affected.
- To avoid impacts to desert tortoises during maintenance activities and other uses of the site residents and visitors would be advised to stay at least 325 feet (100 meters) from tortoises.
- Maintenance/rehabilitation activities would be focused during tortoise estivation in summer (June – August) and during tortoise hibernation in winter (November – February).
- When maintenance or rehabilitation activities occurred during active periods (other times of the year), onsite surveying prior to and during these activities, if needed, would occur to ensure that they would have minimal or no effects on desert tortoises.
- If tortoises were found and the work could not be modified or implementation period changed to avoid tortoises and their habitat, the USFWS would be consulted prior to implementation of the proposed actions.
- If direct impacts are later found, impacts to desert tortoise habitat could require a 1:1 replacement or restoration of tortoise habitat in the vicinity.

Cumulative Impacts: Species considered rare, threatened, or endangered in Death Valley National Park have primarily become that way through development and alteration of habitat outside the park. No known species have become listed or proposed as a result of actions wholly within the park. Park managers are tasked with treating listed, proposed, and rare species as if they were all listed, and park actions are routinely evaluated for their potential effects on rare species. The construction of housing under Alternatives 2-3 as described in this Environmental Assessment would constitute a negligible incremental impact against the background of other activities occurring in the park and the surrounding Mojave Desert.

Conclusion: Alternative 1 would have no impacts on special status species. Alternative 2, where construction in Beatty is called for, would be not likely to adversely affect the desert tortoise. Alternatives 2 and 3, where in-fill construction is called for in the Cow Creek Housing Area, would be not likely to adversely affect long-eared owls. There would be no impacts to special status species in the Salt Pan Vista construction area under Alternative 3. In all action alternatives (2-3), there would be no additional impacts to other special status species. There would be no impairment of special status wildlife, wildlife habitat or its values as a result of the implementation of Alternatives in this Environmental Assessment.

H. Impacts to Prehistoric and Historic Archeology

Alternative 1

There would be no additional impacts (no effect) on known archeological resources as a result of the implementation of Alternative 1. The trailers were installed at the Grapevine Housing Area in 1970 just as cultural and archeological resources protection laws and guidelines were instituted. As a result, it is unknown whether archeological resources were surveyed for at that time. Although recent surficial surveys for other projects in the vicinity have not located any archeological resources, it is possible that subsurface evidence could exist. Future maintenance projects would, however, have the potential for disturbing previously unknown or undiscovered archeological resources. Because the discovery of these resources would employ mitigation measures noted below in Alternative 2, and because it is unlikely that archeological resources would be discovered in this way, it is anticipated that there would be no adverse effect if previously undiscovered archeological resources were later found.

Alternative 2-3

New construction under Alternatives 2-3 has the potential to affect previously unidentified archeological resources. Based on surveys, however, ground disturbance in the Cow Creek Housing or Administrative areas would be unlikely to uncover archeological resources. Numerous development projects that have occurred in these areas have not uncovered prehistoric archeological remains. Historic archeological resources have been noted in one of the proposed construction sites in the Cow Creek Housing Area (South Skyline Loop). They are comprised of remains from a now defunct water system and may be salvaged or removed, according to their value for the park's museum collections once uncovered by construction. Due to the limited extent of the subsurface testing, however, it is possible that prehistoric and/or historic-period archeological remains could be disturbed by excavation of the building foundations into previously undisturbed sediments.

As noted under *Affected Environment*, it is unknown whether prehistoric or historic Native American sites exist at the Beatty site. According to the Land Sale Environmental Assessment (BLM 2006), one site considered ineligible for the National Register was found on this adjacent parcel. If Alternative 2 were selected for implementation, additional archeological survey and analysis of this site would occur

prior to the decision being made to develop it. It is suspected that because the site is "designated for disposal," that archeological surveys have not found sites or not found sites eligible for the National Register. In addition, as appropriate, consultation with applicable Native American Indian Tribes would occur.

If prehistoric or historic archeological resources are discovered during any portion of the proposed action, work in the area associated with the find would cease until evaluated by the park and/or BLM Archeologist or designated representative. If necessary, relocation of ongoing work to a non-sensitive area may be required to allow for completion of additional testing and documentation. Every effort would be made to avoid further disturbance to the site until the significance of the find can be evaluated. In general, the preferred method to protect identified archeological resources would be to avoid further disturbance by relocation of the impact to a non-sensitive site. When that cannot be accomplished, the next method would be professional documentation of the find, prior to additional ground-disturbing activities. In the event of a significant find, consultation with the California State Historic Preservation Office and Native American tribes, as appropriate, would occur and recommendations would be sought for appropriate treatment of the resources located.

Mitigation: The following impact avoidance, minimization and mitigation strategies would be used to protect archeological resources:

- Prior to construction, or the beginning of ground-disturbing activities, the park archeologist would be contacted to (as appropriate) establish a plan for archeological monitoring of ground-disturbing site work, including clearing, tree removal, topsoil removal, structure or trench excavation, and landscaping. As applicable, archeological monitoring may include visual monitoring of excavated materials, preparation of stratigraphic profiles of excavated cut banks, or hand excavation and screening of sediments to provide archeological and geological information.
- Prior to construction, all sensitive cultural resources to be protected within the project area would be marked with flagging and identified per the requirements of the plans and specifications. Placement of flagging will be verified by park staff. Fencing to identify and protect cultural resources from disturbance would be erected as appropriate and would be verified by park staff.
- No ground-penetrating work such as grading, excavation, trenching, drilling, or stump and root removal in culturally sensitive areas would begin without the presence of Archeological Monitor, and if appropriate, a Native American Monitor.
- If the contractor's staff, Archeological Monitor, or Native American Monitor discover previously unknown cultural resources, immediate work stoppage and / or relocation of the work to a non-sensitive area may occur to allow collection of soil samples and recordation.
- If resources are discovered while Monitors are absent, work would be stopped immediately and the discovery reported to the Contracting Officer.
- To minimize ground disturbance, all staging areas would occur in areas recently disturbed by construction or access roads.

- When it is necessary to stop work due to cultural resources discovery, the contractor would cease all activities in the area of discovery and take measures to protect the resources discovered as directed by the park.
- In the event the discovery represents human remains or any objects subject to the Native American Graves Protection and Repatriation Act (NAGPRA), the NPS will follow procedures outlined in NAGPRA regulations (including the potential need to stop work for a minimum of 30 calendar days). Work may resume in non-sensitive areas during this time.

Cumulative Impacts: Archeological resources in Death Valley National Park may have been adversely impacted to varying degrees from past construction-related disturbances (prior to the advent of archeological resources protection laws); visitor impacts and vandalism; and erosion and other natural processes. There would be no construction-related contributions to cumulative impacts from Alternative 1. There is a slight possibility however, that future proposed work or landslides could affect unidentified cultural resources. Because of mitigation measures, Alternatives 2-3 would also not be expected to contribute to cumulative effects on archeological resources.

Conclusion: The proposed actions under the Alternatives described in this Environmental Assessment would have no adverse effect on and would not impair park archeological resources or the values for which they have been protected.

I. Impacts to Historic Structures / Cultural Landscapes

Alternative 1

Aside from the Grapevine Ranger Station, there are no historic structures in the vicinity of the Grapevine Housing Area. No new construction would take place under this Alternative at that location. Removing the Grapevine trailers from service as they are condemned would have no effect on historic structures or potential cultural landscapes.

Alternatives 2-3

Beatty Site: There are no historic structures or cultural landscapes present at the Beatty site. There would be no effect on historic structures or cultural landscapes as a result of the potential construction of housing there under Alternative 2.

Cow Creek Housing Area (Siren Site, North and South Skyline Loop Sites): The Cow Creek Housing Area, or Park Village, is directly related to the nearby Cow Creek Historic District. However, the removal or modification of original housing and subsequent construction of additional housing since the period of significance has substantially altered the village such that it no longer retains integrity and is therefore not included within the Cow Creek Historic District. All of the remaining 1930's vintage, Civilian Conservation Corps houses have been determined to be ineligible for collective or individual listing on the National Register of Historic Places. Although during planning, PV-42 continued to remain at the Siren Site, it has now been removed and would not be affected by proposed construction of a dormitory on the

site under Alternative 2 or a duplex on the site under Alternative 3. The siren itself would also not be affected. As a result, there would be no effect on historic structures or cultural landscapes.

In addition, because the proposed housing would be constructed to the standards created in the Design Guidelines for the Cow Creek Historic District (see *Actions Common to All Action Alternatives*), they would blend in with other structures in the Cow Creek Administrative / Maintenance area. Because those guidelines were created to match the Cow Creek Historic District, the overall appearance of the exterior of the housing would closely resemble the early CCC structures of the area, maintaining the character of the housing area's cultural landscape.

Salt Pan Vista: Construction of two eight-bedroom dormitories at Salt Pan Vista under Alternative 3 would have no adverse effect on historic structures or cultural landscapes. The proposed location for these structures would be adjacent to and south of the Cow Creek Historic District. The dormitories would likely be located between the Natural History Association building (built in 1999) on the west and the CalTrans maintenance yard on the east. There would be no direct effect on the historic district. However, the dormitories would be visible from some locations within the historic district, as are the NHA building and the CalTrans maintenance yard.

As with other new housing proposed in this Environmental Assessment, the dormitories would be constructed to the standards created in the Design Guidelines for the Cow Creek Maintenance Facilities (NPS 1999). Because those guidelines were created to match the historic district, the overall appearance of the buildings exteriors would resemble, as closely as practicable, the early CCC structures of the area. Therefore, there would be little visual contrast with the historic district, and the dormitories would provide better visual integration with the historic district's structures than the recreational vehicles and travel trailers that are often parked at the Salt Pan Vista site. Based on these construction guidelines, the proposed construction of the dormitories at Salt Pan Vista would have no adverse effect on historic structures or cultural landscapes.

Mitigation

Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to historic structures and cultural landscapes would be the same as noted above under archeological resources, plus:

- If Historic Properties are discovered during implementation of the proposed action, or if the proposed action may affect Historic Properties in an unanticipated manner, all potentially harmful activities would be stopped in the vicinity of the discovery and all reasonable steps would be taken to minimize harm to the property until consultation with the State Historic Preservation Office or Native American Tribes concludes.
- Housing would be designed to blend with the pre-existing historic or non-historic structures and natural landscape in the vicinity. Vegetation would be planted or berms constructed as appropriate to minimize visual impacts.

- Any future construction within the Cow Creek Historic District must be compatible with the existing historic structures in the district, meeting the Secretary of the Interior's Standards for new construction within a National Register Historic District" (2000:42).
- All construction that takes place in either the current Cow Creek housing or administrative areas would be done to the standards created in the Design Guidelines for the Cow Creek Maintenance Facilities. As those guidelines were created to match the historic district, the overall appearance of the exteriors of single-family houses and duplexes would closely resemble the early CCC structures of the area.

Cumulative Impacts: Over time, ongoing development in the Cow Creek Administrative and Maintenance areas has contributed to a cumulative adverse effect on the Cow Creek Historic District. Nonetheless, the Cow Creek Historic District was designated because it contains sufficient historical integrity to be listed on the National Register of Historic Places. Subsequent to its listing on the National Register, new development proposals have been considered in light of their effects on the Historic District. In addition, additional investigation into the character-defining features of the Historic District has been made, including the completion of a Level II Cultural Landscape Inventory and a Cultural Landscape Report as well as design guidelines for new construction in the vicinity of the District. As a result, there have been no new adverse effects on the Historic District and future actions would continue to be developed to have no adverse effect as well. Because the current project is outside of the Historic District and its development will meet the criteria in the Design Guidelines for the Historic District, it would result in no additional cumulative adverse effects.

Conclusion: Alternatives 1 and 2 would have no effect on historic structures or cultural landscapes. Alternative 3 would have no adverse effect on historic structures or cultural landscapes, including the Cow Creek Historic District or any potential cultural landscapes associated with it. There would be no impairment of historic structures or cultural landscapes or the values associated with them as a result of the implementation of any of the Alternatives as described in this Environmental Assessment.

J. Impacts to Park Operations

Alternative 1

There would be no additional physical impact on park operations once the trailers had been removed from this site, trailer hook-ups installed and the area rehabilitated. These costs would not be compensated for by the income associated with providing housing, although some costs would be recouped by the sale of the trailers. Occasional income would also be generated as a result of providing some trailer hook-ups (for temporary use) at the site. There would be negligible to minor adverse effects on park operations due to the time and money needed to complete these actions.

Overall housing income would decrease as the trailer units continue to be removed from the Grapevine area. In return, the maintenance costs would also decrease since there will no longer be structures to maintain. This would result in a slight, short-term beneficial impact on park operations.

The greatest impact to park operations from the implementation of Alternative 1, however, would come from the loss of 26 bedrooms of formerly available seasonal housing in an area with little housing available in the public market. As described in the *Background* section, when winter 2004-2005 Scotty's Castle seasonal employees needed to find housing outside the park due to the loss of about half of the trailers, many of them found it in Beatty, Nevada. The housing they found was unfurnished and in the same or worse condition than the park trailers. Further, given start-up costs for utilities and gas for the hour-long commute into the park, their winter employment became barely a break-even venture. As a result, many were not able to earn money to support them during their next college term.

During the year seasonal employees had to find housing in Beatty, there were increases in the amount of commute time (two hours per day), increased difficulty in scheduling, recruiting, and retaining employees, and a deterioration of living conditions for these employees. These were and would continue to be long-term minor to moderate adverse impacts on park operations.

Alternatives 2-3

Number of Units: All alternatives call for a 1:1 replacement of housing lost as a result of trailer condemnation. Construction of between four (Alternative 3) and five (Alternative 2) new buildings, while it would increase the number of permanent structures in the park, would not increase the number over the formerly existing number of structures, which included the twelve trailers in the Grapevine Housing Area. As a result, this minor adverse effect on park operations would be balanced with a minor beneficial effect.

Energy Conservation and Maintenance: A number of energy-conservation measures would be incorporated into the proposed construction of housing in all action alternatives (2-3). These measures would reduce the impact of maintaining the housing on park operations. Overall, maintenance costs would likely remain similar, with fairly high maintenance costs associated with continuing to maintain the Grapevine trailers replaced with the long-term maintenance costs, initially very low and later increasing over time, associated with maintaining the new house, duplexes and dormitories. Costs of maintaining the Beatty houses in Alternative 2 would be somewhat higher because of the additional commute time to get maintenance equipment and employees out to the site, however, access to some supplies would be more directly available depending on services available in the town.

Adequacy of Current Utilities: New housing, if constructed in the Cow Creek Housing Area (under Alternatives 2 or 3), would draw on the Cow Creek water and sewer systems, bringing them closer to their designed treatment capacities, however they would be fully capable of meeting the needs under even Alternative 3, which would result in the construction of both the house and duplexes and dormitories within the

Cow Creek Developed Area. Alternative 2 would consist of only the dormitories, so would not bring the systems as close to their capacities.

Viewsheds: Because most housing would be constructed in previously developed areas, new construction would add to pre-existing viewshed issues only in the alternatives involving construction at Salt Pan Vista (Alternative 3). Minor-to-moderate adverse impacts to the viewshed from Highway 190 would be mitigated by the use of landscaping and berms to reduce the effect of the new dormitories.

Commute: Both action alternatives (2-3) would result in increased commute times for Scotty's Castle seasonal employees (from no or little commute (5-10 minute drive) to a commute from the Cow Creek Developed Area to Grapevine, a distance of approximately 55 miles (60 minutes), commute times for those living in Beatty would also be increased from 5-10 minutes from Cow Creek to Furnace Creek to from 60-70 minutes from Beatty to Furnace Creek. This would result in a long-term, minor adverse impact on park operations, one that could potentially be mitigated by the use of a park-led carpool or carpool program to assist seasonal employees with expenses.

Construction Traffic/Congestion: All action alternatives would result in temporary, negligible to minor increases in the level of congestion / traffic due to construction. These would be greatest in the Cow Creek Housing area, which has the most likelihood of disrupting other park and cooperator employees living there and least in the Salt Pan Vista and Beatty areas, where construction staging out of normal traffic flow patterns would be more available.

Parking: Alternatives using the Cow Creek Housing area for new housing construction (2-3) would potentially have limited parking available, due to the limited number of infill sites and street parking available in the housing area. This would be greatest in Alternative 2, where, unless a better solution was found, parking could become a limiting factor and a source of frustration for the proposed residents of the dormitories and other nearby residents of the Cow Creek Housing Area.

Mitigation: Measures that would be included in the proposed project (as appropriate to the alternative actions) to minimize construction impacts to park operations include:

- Construction would occur during daylight hours to minimize disturbance to nearby residents. If construction occurs adjacent to offices, the school, etc., the construction coordinator would coordinate with stakeholders to limit disturbances while permitting the project to progress.
- Housing would be designed to incorporate modern water, sewer and energy efficient technology, reducing maintenance needs and impacts on park resources.
- Buildings would be constructed of materials and finished with colors that will blend into the existing landscape.
- Site work and grading would be the minimum required to construct the buildings.
- Landscaping with native and/or salvaged species would occur following construction.

Cumulative Impacts: Housing construction within the park over time has allowed the park to expand and develop according to general management planning. Although the provision of housing in the National Park System has diminished over time, due to the expansion of formerly outlying communities into areas accessible to park employees, this has not been the case at Death Valley National Park, where living in distant communities continues to involve long commute times and few services. In Beatty, Nevada, a community of obvious choice for park staff to reside in, services have grown thinner due to the boom and now bust mining community influences. Increasing park presence in Beatty would assist this community in retaining its connection as a gateway to the park and would solve some park housing problems under Alternative 2. By the same token, constructing additional housing in the park whether all (Alternative 2) or part (Alternative 2) would result in both long-term benefits and impacts to park operations.

Conclusion: Alternative 1 would result in short and long-term negligible to moderate adverse impacts on park operations and long-term negligible to minor beneficial effects on park operations. Alternatives 2 and 3 would have a variety of similar impacts; however Alternative 2 because it would also require additional effort to gain administrative use of the Beatty land, would have slightly greater impacts on park operations. In addition, Alternatives 2 and 3 would result in some negligible to minor congestion in the Cow Creek Housing Area and potential parking problems, while Alternative 3 would result in viewshed impacts not present in Alternative 2.

VII. Consultation and Coordination

A. Public Review

1. Internal and External Scoping

The public scoping period for this Environmental Assessment began on February 3, 2006 and ended on March 15, 2006. During this time, the public was encouraged to submit comments. During the public scoping period, two emails were received and analyzed. Public scoping comments are summarized in *III. Purpose and Need*. These comments were used to prepare the alternatives presented in this Environmental Assessment. Comments were also solicited formally and informally from park, regional, and other planning team members and from other agency staff.

The public outreach called for in Section 106 of NHPA was integrated into the NEPA process in accordance with National Park Service Management Policies (NPS 2006).

This Environmental Assessment is being made available to the public, federal, state and local agencies and organizations through press releases distributed to a wide variety of news media, direct mailing, and placement on the park's website as well as in local public libraries.

Responses to comments on the Environmental Assessment will be addressed in the proposed Finding of No Significant Impact (FONSI) or will be used to prepare an Environmental Impact Statement (if appropriate).

2. Agency Consultation

California State Office of Historic Preservation

During the development of the proposal for new housing at Cow Creek, the park proceeded with consultation with the California State Office of Historic Preservation regarding the removal of several structures, two within the Cow Creek Historic District and two within Park Village. In a letter dated July 26, 2006, the park requested concurrence with a determination of "No Effect" on removal of PV-3 and PV-42 with respect to their effect on the only eligible structure in the area, PV-69, the former comfort station. Moreover, they would not affect the Cow Creek Historic District. This request mentioned that with respect to PV-42, "while modifications have been made, this is the last structure of this style of CCC construction located in the Cow Creek housing area." The California State Historic Preservation Officer responded with concurrence on a determination of "No Adverse Effect" and noted that "Although the residences are to be demolished, stone work for each of the residences is to be retained."

Because retaining stonework associated with PV-42 was not part of the park's proposed use of the space for new housing construction, a follow-up letter/phone call was made to SHPO wherein SHPO concurred with the removal of the stonework, pending its reuse in a suitable location in the park.

3. Native American Consultation

Native American consultation occurred with the Timbisha Shoshone Tribe on March 11, 2005 and June 17, 2005). Most members participated in site visits (12-5-05 Environmental Review Committee Minutes).

4. Public Review

This Environmental Assessment is available for a thirty-day public review period from October 20, 2006 to November 20, 2006. At that time, a press release will be distributed to people and businesses who have expressed an interest in the housing project. The press release will also be mailed or emailed to a list of persons and agencies that have expressed interest in Death Valley National Park proposed actions and events. Included will be organizations such as The Wilderness Society, Sierra Club, etc. The Environmental Assessment will also be available at the following local libraries: Tecopa, Bishop, Big Pine, Independence, Lone Pine, and Ridgecrest, California libraries; Beatty and Pahrump, Nevada libraries. In addition, organizations and individuals that have requested to will receive a copy of the Environmental Assessment. Others will be sent to those who request copies during the review period. The Environmental Assessment will also be available on the park's website, located at http://www.nps.gov/deva .

Comments on this Environmental Assessment should be directed to:

Superintendent
Death Valley National Park
P.O. Box 579
Death Valley, California 92328

or to DEVA_superintendent@nps.gov

If reviewers do not identify substantial environmental impacts, this Environmental Assessment will be used to prepare a Finding of No Significant Impact (FONSI), which will be sent to the National Park Service Pacific West Regional Director for signature.

During the public review period, additional consultation will occur to affirm determinations of effect (if needed) with the California State Historic Preservation Office. Notice of the concurrence with the determinations of effect for historical resources will be identified in the FONSI for this Environmental Assessment, if prepared (see above).

For more information concerning this Environmental Assessment, please contact park Chief of Maintenance, Wayne Badder at (760) 786-3261. For a copy of this document, please call Death Valley National Park at (760) 786-3200.

B. List of Persons and Agencies Consulted / Preparers

The following people and agencies were consulted during the preparation of this Environmental Assessment:

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